ENVIRONMENTAL PROTECTION AUTHORITY
BEFORE AN EXPERT CONSENTING PANEL

IN THE MATTER OF THE FAST-TRACK APPROVALS ACT 2024

AND IN THE MATTER OF AN APPLICATION BY MATAKUNUI GOLD LIMITED UNDER SECTION 42 OF THE FTAA

FOR THE BENDIGO-OPHIR GOLD PROJECT

APPLICATION NO: FTAA-2507-1089

Hearing:	Held in Monarch Room, Willeston Conference Centre, 11-15 Willeston Street, Wellington Central
Date:	17 June 2026
Panel:	Hon Matthew Muir KC (Chair) Gina Sweetman Peter Kensington Roger MacGibbon Tim Mulliner Phillip Barry
Counsel:	Joshua Leckie and Mia Turner, Lane Neave, for the Applicant David Randal for Otago Regional Council Sally Gepp for Sustainable Tarras Rob Enright and Jen Vella for Environmental Defence Society Mike Holm and Nicole Buxeda for Kā Rūnaka (via AVL)
Experts:	Benje Patterson for Applicant Natalie Hampson for Central Otago District Council Dr Kirdan Lees for Central Otago Regional Council James Harris, Professor James Higham, (via AVL), Dr Richard Meade (via AVL), Edward Miller, (via AVL), Dr Geoffrey Bertram for Sustainable Tarras Dr William Kaye-Blake for Environmental Defence Society

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Mr Muir: Good morning and welcome to the Panel. BOGP concurrent hearing. This morning economics. So we have some fresh faces in the room, and a number I understand online. For the benefit of those new to the process, a quick introduction of who is on your Panel today. I'm Matthew Muir, I'm the BOGP Panel Chair. To my left in order is Mr Peter Kensington, landscape architect; Mr Roger MacGibbon, ecologist; Mr Tim Mulliner, who is an engineer with specialisation in matters relating to water. To my right, Ms Gina Sweetman, who will be known to a number of you as a very experienced hearings Commissioner and planner. Some of you may have even had the pleasure of appearing before her in the past. And then the one that you will want to keep a very eagle eye on today, that is Mr Phil Barry, our economist. There is, to a keen observer, a seventh member of our Panel. That's Mr Doug Johnson. He is currently overseas, returning in I think a day or two, and he will be either keenly observing these proceedings on the simultaneous broadcast, or will be catching them at a somewhat more hospitable hour as Europe comes on board later in the day. In any event, he will be all over everything we have discussed, and will discuss today.

So perhaps I could follow that up now with some introductions of those experts who are appearing today. Mr Patterson, yes you're for the applicant. No doubt feeling somewhat ganged up on today, but we'll look after you. Then for the Central Otago Regional Council we have, yes, and could you introduce yourself please?

Dr Lees: Kia ora. I'm Kirdan Lees, economist at Sense Partners.

Mr Muir: Yes. Right, thank you. Thank you very much Dr Lees. And then Ms Hampson is it for the Central Otago Regional Council also?

Ms Hampson: Yes.

Mr Muir: Thank you, very much.

Ms Hampson: For the District Council.

Mr Muir: Oh you're for the District Council? Ah-ha that's why I got myself a little confused. Our notice is not quite right in that respect. The District Council. And then you are?

Dr Bertram: Bertram, I'm listed as remote there. But since I'm a Wellington resident, I'm here.

Mr Muir: Ah, right. Okay, so you are now removed from the remote column to the present. Thank you. Thank you Dr Bertram. All right, and?

Dr Kaye-Blake: Bill Kaye-Blake for EDS.

Mr Muir: Yes, good morning Dr Kaye-Blake. That's fine. And is Mr Harris now online, is he, for Sustainable Tarras who was to have appeared in person today? Just checking, or is he - - - Could you help me on that please?

Ms Gepp: I can't see him sir. I think – yes, I am expecting him. I'll have [inaudible].

Mr Muir: Thanks for that. We'll roll with the punches on that. And then in addition we have Dr Meade. Do we have you online here Dr Meade?

Dr Meade: Yes sir, I'm present.

Mr Muir: Yes, good morning Dr Meade.

Dr Meade: Kia ora.

Mr Muir: And we have Mr Miller?

Mr Miller: Kia ora. Yes sir, nice to see you.

Mr Muir: Yes. Yes, good morning Mr Miller, both online. And Professor Higham?

Ms Gepp: Professor Higham is not here yet, but he'll be joining online a little bit later - - -

Mr Muir: A little bit later.

Ms Gepp: - - - because of the time difference.

Mr Muir: Right.

Ms Gepp: So that's why we – you had granted, or you had – you had said that the Panel would hear his issues a little bit later in the session.

Mr Muir: That's right. At around, remind me, is it 10.30?

Ms Gepp: Around 11.30.

Mr Muir: Around 11.30 for Professor Higham.

Ms Gepp: Thank you.

Mr Muir: So on all issues relating particularly to the tourist industry. Let's just ensure that – and what's his availability generally Ms Gepp? About an hour and a half to two?

Ms Gepp: Yes, I think that – yes, he's got no significant time constraints - - -

Mr Muir: Right, thereafter.

Ms Gepp: - - - thereafter.

Mr Muir: So we're going, that's right, we're going to try and put him at 11.30. Thank you for reminding me of that. And counsel, we have Ms Buxeda and Mr Holm, you're - - -

Ms Buxeda: We are present, thank you very much.

Mr Muir: Yes, thank you very much, Ms Buxeda and we have counsel representatives here today Ms Gepp KC, whom I have just been speaking with.

She, of course, is for Sustainable Tarras. Seated directly behind her is Mr Randal for Otago Regional Council, and to Ms Gepp's right is Mr Enright, and Ms Vella for EDS, and Mr Leckie sits at the front left there for the applicant.

Right, with those introductions, no doubt each of you has been advised of the methodology that we have now adopted for these concurrent hearings which involves us, at the outset, identifying on the whiteboard the five or thereabouts, typically it's five to six, critical issues that we need to discuss and review today.

Then the process that we follow is for each of the experts, who is engaged in that particular issue, and we recognise that there are some disciplines within the profession, each who has a relevant contribution to make to that topic will do so. They may be professionally and appropriately interrupted or subject of comment by others on the panel, provided it is done in a respectful way, and there may well be questions from the Panel, while they are making those initial observations. And we'll run around the room in that – in the way that I described.

The Panel will then have any questions, additional questions that they wish to ask. Then I pass over to counsel who have, in most cases, today sought leave to cross-examine. And the approach of the Panel is typically to grant that leave with the understanding of counsel that we do have some time limitations, and they have responded very professionally over the last two weeks in limiting their cross-examination to the topics that really matter.

And then we will round out that particular topic by going back to the panel to see whether there is anything that has emerged from the cross-examination which the panel wish to review. Then we'll move sequentially onto the next topic until we have completed the day's agenda.

So Mr Patterson, have you had an opportunity to discuss with your fellow economists what you see as the big ticket items, understanding that other sub-issues may drop out of them, and then typically at the end of the day I will always round back to all of the experts before we end to see if there is anything else that you think we, as a Panel, need to review with everyone in the same room before we pull stumps. So Mr Patterson have you had an opportunity to do that?

Mr Patterson: Partially.

Mr Muir: Partially, yes.

Mr Patterson: So I put forward a list of five potential topics - - -

Mr Muir: Yes.

Mr Patterson: - - - that I thought should be identified.

Mr Muir: Yes.

Mr Patterson: Dr Meade had also circulated a list of five topics.

Mr Muir: Right, okay.

Mr Patterson: They seemed to be, I would say, broader than the ones that I had suggested. So mine could be a subset of those.

Mr Muir: Right.

Mr Patterson: But they were more targeted.

Mr Muir: Well since Dr Meade, as at a broader level of generality, that's usually a good place to start with these topics. So why don't I ask Dr Meade to share with us what he considers the principal topics, and we'll ask Ms Sweetman to leave some gaps between sequential topics one to five so that we can infill with 1(a), (b), (c) as required. Is that a fair way to do it? Are you happy with that?

Mr Patterson: Yeah.

Mr Muir: Right. Okay. So Dr Meade?

Dr Meade: Sir.

Mr Muir: What topics did you settle on?

Dr Meade: Yes, thank you. I actually just emailed them to Ms Gepp, as it happens, in case they'd assist. But if it doesn't assist, I'm happy to just read out the topics.

Mr Muir: Yes.

Dr Meade: So the first one - - -

Mr Muir: So let's get them up on the board.

Dr Meade: Okay, very good. So the first one is simply economic methodology, which is getting to the question of things like cost benefit analysis versus impact analysis, present value, et cetera, et cetera. So economic methodology is the simple heading for that topic.

Mr Muir: That sounds suitably broad.

Dr Meade: A natural place to start I would think, sir. Second topic is key assumptions and I elaborated on that by saying base/upper/lower cases. And I further elaborated, sensitivity analyses and/or other scenarios. I can say that again if it's necessary. So key assumptions – base/upper/lower cases, sensitivity analyses and/or other scenarios. That's the longest one. Topic 3, assessing market and non-market (adverse) impacts. I put brackets around adverse just to leave open the possibility that we think about other impacts rather than adverse impacts. Topic 4: addressing other key risks/uncertainties. And then topic 5. I have a floating topic, by the way.

Mr Muir: Just one moment. Yes, thank you Dr Meade, topic 5?

Dr Meade: Topic 5: assessment of, and conclusions regarding regional or national significance of benefits. So that's assessment of, and conclusions regarding regional or national significance of benefits.

Mr Muir: Would that include, as a preliminary point, establishing what we agree to be "the region" for the purposes of a regional economic benefit assessment?

Dr Meade: I think it would be reasonable to include that in that topic sir, if we haven't already touched on it.

Mr Muir: Right, yes. Because it is something that interests the Panel.

Dr Meade: Of course, and then topic – I called it Topic X, because this is the floating topic to accommodate Professor Higham. So Topic X to be discussed when Professor Higham is able to join, is simply tourism impacts.

Mr Muir: Tourism. Right. So could I now just touch base with Mr Patterson? How would you like to infill that, if at all? Or are you happy enough with that?

Mr Patterson: Well regarding the key assumptions, one of the primary ones there was the gold price. You know it was what I – I had singled out as the primary point of contention, rather than going through all assumptions.

Mr Muir: Right, yes. Certainly something that we will want to have – we are anxious to have [inaudible]

Mr Patterson: I'm very keen with the methodology to discuss the benefits measurement between things like GNP and GDP.

Mr Muir: Yes.

Mr Patterson: And that's especially in light of other industries. It's not discussing their own ownership stakes. And what I would say some of those other key risks and uncertainties, obviously we can get very broad outside of our economic swim lane in that space quite quickly. For me the primary issue there is the potential for direct effects on other industries, and I saw that as a natural point where tourism would be able to be discussed.

Mr Muir: Well depending in the way which the day is developing, well that might just coincide with around 11.30 so we'll just see.

Mr Patterson: And then just the only other thing with key risks, sort of uncertainties, for me there was the labour sourcing and housing issues to discuss within that.

Mr Muir: Right, perhaps we'll just put an asterix there.

Mr Patterson: Yeah. Essentially, what I have done is from my perspective -- I understand there are other views – have distilled down to the subsets of those broader topics that I wanted to discuss, yeah.

Mr Muir: Now could I touch base now with Commissioner Barry and see whether he is reasonably satisfied that that adequately defines, albeit at a broad level, the issues that we need to review today?

Mr Barry: Thank you Mr Chair. Look that does seem quite comprehensive. There are two issues I would particularly like to hear on as well, which perhaps will fit in with one of these categories. One is the key benefit around royalties and taxes, and just I'm sure Mr Miller will have some thoughts on that.

Ms Sweetman: [inaudible]

Mr Barry: It's not an assumption. It's more of an impact isn't it. Maybe even under 5, assessment of conclusions, might make sure we pick it up there, if not earlier. Taxes and royalties.

Dr Bertram: Well either way, I'd suggest it probably comes under assumptions because it's well prior to coming to conclusions that we need to have some view about the uncertainties around the tax projections.

Mr Barry: Let's put it there. That's great, thank you Dr Bertram. And then the other was more specific. But just making sure that we pick up the costs of any enhanced conditions. Any mitigation measures and constraints. Just wanted to make sure that we're agreed, or at least clear on how they should be treated in the -- again it's an empirical question, but perhaps pick it up under the assumptions as well. So mitigation measures. Thank you.

Mr Muir: Thank you, very much Commissioner Barry. Right, all good so far? Right. We'll kick off then with the economic methodology. I can't read the green print?

Ms Sweetman: Benefits or [inaudible]

Mr Muir: Benefit, yes, right. And I'm going to ask you, Mr Patterson, to lead off the applicant on that subject.

TOPIC 1: ECONOMIC METHODOLOGY

Mr Patterson: Thank you Chair. So, I think the best way to describe the method that's been followed and has subsequently been refined through the process of responding to feedback in my section 53 response.

Mr Muir: Yes.

Mr Patterson: I think it's important to emphasise that there has been an evolution of, I guess, the breadth of my work in response to those comments.

Mr Muir: That's a very good result of conferencing and this process that we're in today.

Mr Patterson: Thank you, yeah. And so it is something that I've appreciated through this process. So I'll follow the economic impact assessment framework from the outset of the identified direct project benefits for the project itself. I've also identified counter-factual scenario of not proceeding. So what is the use of the land if we do not proceed with the project? So that was where my report initially stood. It was all part of the substantive application.

Now, in response to feedback from the wider parties, I also began to consider the potential for there to be impacts on other industries that might occur if the project proceeds. So that was in my section 53 responses, and in my RFI responses to the Panel. And so I addressed at length the potential for the economic risks to industries operating immediately surrounding the mine sight, namely tourism and viticulture. They were the industries that raised their hands. What I did see in that, was that there's potential direct economic cost to other industries if the project's operating within the conditions of its consent are negligible in scale.

So this sort of holistic approach to an economic impact assessment that's consistent with other fast track decisions to date, including what was followed in the Waihi North project.

So I believe that performing an economic impact assessment in this way, to the best of its ability, is a helpful way of understanding the scale and extent of the project from an economics perspective, against the potential economic risks of other industries.

Now within that I do acknowledge that with a complex mining project there'll be a range of other potential risks: heritage, culture, environment. However, understanding of these types of effects would generally be more appropriately described through the evidence of relevant technical experts in those fields who have a much more detailed understanding of the risks and potential effects than I could offer from my perspective.

Mr Muir: Each of those being in what you envisage the Panel primarily undertaking a qualitative assessment in respect of?

Mr Patterson: Yes, exactly. I would anticipate with those other disciplines that it would primarily be a qualitative interpretation that the Panel takes. And in this situation, we're extremely lucky that there are dozens of world-leading experts in those other fields.

Mr Muir: So fundamentally, just looking back at the RWS, you agree with Dr Meade that the fundamental methodology is to quantify to the extent you can in quantitative terms, dollars, and then you propose that the Panel undertakes a qualitative assessment of those that you do not – that you say do not readily lend themselves to a quantitative assessment?

Mr Patterson: Yes, that's what I would say.

Mr Muir: And just for my benefit, if you look at the range of considerations that we have here, your evidence to this Panel is that in relation to matters, such as impact on other industries, tourism and viticulture, we may undertake a quantitative assessment. What other impacts do you say lend themselves readily to a quantitative assessment?

Mr Patterson: So from what I have seen through the evidence that I was – the comments that I were responding to, it was primarily tourism and viticulture that raised concerns that there would be a direct economic effect on their enterprise, if the project were to proceed. I didn't see anything else that hadn't been – it wasn't the subject of mitigations through consenting conditions.

Mr Muir: So when we look at the range of other potential impacts here; heritage, culture, ecology, landscape/environment, your fundamental position is that that's really not an area in which you, as an economist, are inviting us?

Mr Patterson: So I guess I'm, I acknowledge that theoretically in some of these sub-issues there are evaluation techniques that an economist could choose to use. You know, even in cases where there's a non-market value - - -

Mr Muir: This is the sort of the thing you see in a national cost benefit analysis?

Mr Patterson: Or the sort of thing that we saw during well-being, budgeting by the previous Government, and put out by the Treasury in tools such as their CBAX calculator, which includes a very extensive social impact database. The challenge that I see is that when these impacts stray too far from something that has a real market valuation, it can get quite ropey in terms of how an economist values things. There's an enormous amount of debate surrounding the assumptions that you would make, and you could end up with quite a broad range and breadth of values that were placed on these matters that inherently get quite subjective at times. And I think relative to that, the alternate of being well briefed by a range of technical experts in those disciplines as to the risks and the potential effects that they see, that that will be much more helpful to the Panel.

Mr Muir: Than trying to put a dollar value on a spring annual?

Mr Patterson: Exactly, or trying to put a dollar value on a lizard, for example.

Mr Muir: So does that, I see that Dr Kaye-Blake wished to contribute on that subject. Is it – have you concluded your presentation there, or otherwise I can go to Dr Kaye-Blake at this point and then come back to you.

Mr Patterson: For now that's - - -

Mr Muir: That's fine.

Mr Patterson: Yeah. Dr Kaye-Blake.

Dr Kaye-Blake: I'm not sure if that's the correct time to jump in but there is another discussion here.

Mr Muir: Well let's just assume that I'm now opening up this topic for your discussion and no doubt you want to start with some observation about what we've just heard about.

Dr Kaye-Blake: Exactly. So, my experience with non-market valuation is extensive. I did my PhD research in non-market valuation 20 years ago. There are – there's decades of economic research on non-market valuation.

The issues that have been raised here, the difficulties of putting a value on things, the difficulties of defining the impacts, these are all topics that have been researched by very clever people across the world for decades. And, we acknowledge, in the field, that it is difficult to do these thing, but it is not impossible, and solutions have been found at each turn, for each issue. So, none of these issues that have been raised are insurmountable. And I can go into detail, but I'll just leave it with that. I don't want to leave you with the impression that it's a fringe part of economics, or we don't know how to do it. We absolutely know how to do this.

The two things then I would add to that, or one, these kinds of methods get used all the time in commercial settings. So this isn't just about valuing lizards or plants. The exact same methods are used for marketing analysis, for planning purpose, for asset management purposes. Because what you're trying to do is understand something that doesn't exist, or doesn't exist in a market.

And the big example I would provide to you is the value of power outages. So, as a household, I cannot go into a grocery store and buy the product off the shelf avoiding a power outage. So all of the power companies around the country, so Transpower for a start, and all the power companies have to have some understanding of what a power outage is worth to households and businesses, and they analyse that using these exact same tools. And I know this because I've done this, and I've done it for Transpower and I've done it for a number of power companies.

And the Commerce Commission accepts these methods as a way of understanding how much these companies should invest in their assets, which affects both, you know, the power poles that you'll see along the road, and also the power, the price that you pay for your power.

So my point is, that these tools, these exact same tools are used to make commercial decisions. And I had a second point that's now escaped me, but I'll leave it there.

Mr Muir: We can round back to it, of course. Yes, Dr Lees.

Dr Lees: Sir, I come at this from a different perspective. So, in my view, the applicant's impact assessment is appropriate and meets the FTAA Benefits Test. And while professionally I would think a CBA is a great way to kind of approach this kind of a problem, and use at least some of the methods that Bill mentions, Chair, I think when I look at what's required under the Act, an economic impact assessment actually meets that benefits test.

There's no requirement to set up a cost on behalf of the applicant, and that's dealt through a separate part of the legislation, you know, section 85, part 3. And while professionally I think a CBA would be a great approach, and would in some ways help the Panel, it would help the Panel think about where things are kind of double counted. It might help the Panel weigh different costs in terms of economic, social and environmental kind of impacts. It's entirely reasonable for the applicant to put forward an economic impact assessment, when I read the legislation. It's not my legislation. So while professionally I might choose to do a CBA here, I look at what's required, it's an appropriate and suitable methodology.

I agree with Bill Kaye-Blake that we do have methods to use, in terms of non-market valuation, that can go very far in terms of valuing environmental, social, and other economic benefits. There are some times where we might look at some cultural values, for example, and find that those are more difficult to quantify. At least partly because it goes to standing and who's impacted and who we might weight differently with the CBA. But certainly if I look at what's required under the legislation I don't see the same requirement to conduct a cost benefit assessment as we might've seen under the RMA.

Ms Sweetman: Just a few questions there for you Dr Lees, have you been involved with any other fast track applications?

Dr Lees: No I have not.

Ms Sweetman: And you're referral to a cost benefit analysis, I saw in the joint witness statement you were talking about section 32 of the Resource Management Act, is that right?

Dr Lees: Yes.

Ms Sweetman: So that relates to plan provisions, and putting plans together. Is that correct?

Dr Lees: If you're telling me that's correct, so I would take that as - - -

Ms Sweetman: Well I'm asking you?

Mr Muir: Don't argue with Commissioner Sweetman on a planning matter. Very ill-advised.

Ms Sweetman: We're dealing with what is equivalent to a resource consent, albeit it's under the Fast Track Act and I know you've had experience with resource consents, Dr Lees.

Dr Lees: Yes.

Ms Sweetman: Have you provided cost benefit analyses with resource consent applications?

Dr Lees: Yes, I have. Perhaps in terms of cost benefit assessments, I did a CBA for the Medium Density Residential Standards which is perhaps reasonably well known in terms of zoning impacts and a cost benefit assessment. That wasn't for a resource consent. That was for the Ministry of Environment. But that would be my best professional basis for you know making the comments I make today.

Ms Sweetman: Thank you.

Mr Muir: Ms Hampson.

Ms Hampson: I think I'd use – is that loud enough – a combination of perhaps what's already been discussed. Just touching on Commissioner Sweetman's point about other fast tracks, I'm involved with eight at the moment, and have been on one panel. So, nine in total. And economic impact assessment has been relatively common to all of them, but certainly something that I have provided, where practical , for each of my fast track applications. I find it a useful methodology, not only to help understand scale and extent of benefits, but also it's quite useful in understanding the temporal nature of those impacts.

As I've said in the joint witness statement, I think you can't just rely on economic impact assessment alone. I think you need to tease out from that other benefits, economic benefits, in the economic assessment, because the EIA will only cover so much, and I firmly agree that an economic impact on GDP or employment shouldn't be taken as wholly an economic benefit. There are components of economic benefit and cost driven impacts.

And so I think it's incumbent on the economist to, when they're setting this out in their assessment, to explain where the benefits lie; what benefits exist outside of what can be quantified in an EIA; and the same with economic costs and disbenefits.

So I think it's impractical to do – to draw on all your skills to talk about quantify what you can and describe cost benefit – cost and benefits and disbenefits in the qualitative way, if necessary.

In terms of putting monetary values on a range of other impacts, I guess I sit on the side of the fence that that's perhaps not appropriate under the FTAA. I'm not sure that putting a monetary value on it helps the Panel understand if it's a sufficiently significant impact to weigh against approval. And I agree with Mr Patterson that the richness you can get from a technical assessment, from a traffic expert, or a heritage expert, will far outweigh the value you will get from a single monetary value that an economist might be able to put on that effect.

So I think my preference is to focus on economic effects and benefits and leave the other impacts to the experts in those fields.

Mr Muir: Thank you. Dr Bertram.

Dr Bertram: Thanks. I'm afraid I come at this from a different perspective. I'm an academic economist, and so about three and a half decades teaching at Victoria University. I ran the Honours level course in economic growth and development.

And so when I look for – when I look at projects I look at them within a much wider framework than I understand the Statute allows you to do. I'm not an expert on statutory analysis. So what I'm going to say may break the envelope within which you're constrained to work. If so, I apologise.

But to me, if you're coming at a project that is to have significant benefit for the nation, and I take this very much from the national point of view, at the very least I think you need to have a general view of the wider economic ramifications of the project, even if, in making a decision, you're confined to narrow down to a small set. I think it's appropriate to firstly, very definitely have a cost benefit analysis view, insofar as that is possible, simply because the economic impact analysis, in my view, fails to give you an accurate picture of the benefits. And because, in my view - - -

Mr Muir: Well you mean the net benefits?

Dr Bertram: The net benefits, yes. Because it seems to me when an economist talks about benefit outside of a particular statute or a frame, [inaudible – blowing nose] net benefits. Now this is an issue that arose under the Commerce Act when mergers and acquisitions were being considered, for example, [inaudible] you know it was dealt with by the Commerce Commission about 2017/2018 I think, and they had to confront this question. The word "benefit" appeared in the Act without qualification. And the – the Commission quite clearly made the decision that it had to be net benefits, because the word "benefit" wasn't economically meaningful, other than in a net benefit sense.

And I certainly take that view that working only with gross benefits will lead you into a path of being confronted with numbers that are much bigger - - -

Mr Muir: [inaudible] Dr Bertram on this Panel, at, or as a matter of statutory interpretation, that the Act pushes you into an assessment of net benefit. It's just a question of the extent to which. I mean we fully understand that on a quantitative – on a qualitative assessment we have got to ultimately compare what one other Panel has described as "incommensurables". And there is an attraction, one must say, particularly for the lawyer on the Panel, in trying to take out this level of subjectivity to the maximum extent you can, so there is some appeal in trying to quantify, as many things as realistically you can, because it gives you a framework, apart from the subjective to assess this.

Dr Bertram: I thoroughly agree with that. That's entirely my view that we need to quantify as far as possible and that does take us, in my view, inevitably into some sort of cost benefit framework.

And there's one other point that I would add to that, which is coming at this from as growth and development point of view. The benefit of a project in a national context lies not only in the comparative static effects that it has. I mean which is what most of the analysis in this case is hinged around. We raise national welfare over a number of years by a certain amount, and then it falls back again as the project disappears. So that's a static change in welfare. And we can try our best, I think, to nail down the size of that.

But there's also a qualitative dimension that is a genuinely economic one, and it's not emotional. It's to do with the way in which a particular project fits with a broader strategic view of where the economy is going. And there are some projects which, as soon as you look at them, are imbedded in the economy, both looking backwards and forwards in a way that generates dynamic benefits, as well as static ones.

I take two or three examples. Gold mining in Otago in the 19th Century generated a model growth in heavy engineering. It established Dunedin as a heavy engineering centre. That's what we call as backward linkage. It had enduring effects on the national economy, in fact [inaudible] delays of development of railways [inaudible – coughing]. So that you had a spin-off benefit coming out of that period of activity, which went through historically to major gains for the economy over time.

Another one in the mining error is the Kapuni Gas field which once discovered and developed had huge impacts on the energy economy of the North Island, which is still playing out. So that these are dynamic spread effects from projects which had genuine impact on the national economy in a dynamic sense.

There are other projects which are just one-offs. They come and go. When they go, what do they leave? This one is one of those. It comes and it goes. It digs a hole. Gold is taken away. Profits are made. Some wages are paid maybe above the reservation rate, so there's some benefit there. Maybe some taxes are paid. We'll come to that later. But at the end of the day you're left with a landscape that's been modified, and no clear residual gain.

And take a comparison again, the earthmoving involved in this project is on the sort of scale of the Benmore Dam. In other words a large amount of fill is being shifted from one place to another. In the case of the Benmore Dam, you're left with a major asset, which a century later will still be delivering gains for the wider national economy. That's the sort of dynamic impact to the project, I'm thinking of.

Mr Muir: But there must be examples, as you have yourself correctly indicated, in terms of the impact of gold mining from the 19th Century where extractive industries are nevertheless although extractive, capable of producing these sorts of dynamic gains.

Dr Bertram: Absolutely. The two examples I've given you, 19th Century gold and Kapuni Gas, are precisely extractive industries which generate wide-spread development gains for the economy. But another one that I have in mind - - -

Mr Muir: [over speaking] function though of scale isn't it, in the 19th Century. And I mean we've heard a number of opponents, within the context of the last two weeks, have said or inferred that this application is a stalking horse for what will be further applications by multiple other miners throughout the region.

Dr Bertram: I can't possibly comment on that. I really don't know what the motivations are, or what's going on with other companies. I mean but I think we basically have to look at this particular project. It's true however, that you know, insofar as precedent's being set along the way by these Fast Tracking hearings, there is an evolving climate, if you like, of business expectations as to what is, and what is not going to get through the gate. And so you, in a way, will be setting precedents that other, well among other things, other goldmining promoters may be looking at.

Mr Muir: But just from an economic, from an economist's point of view, if the result were to be to grant this consent, and you say then open the gate, then this could be the beginnings of something that had the same impacts that you've attributed to Kapuni or to 19th Century goldmine activity in Otago.

Dr Bertram: It could be, but I think it's very unlikely, if you look at the characteristics of modern gold-mining. Gold-mining in the 19th Century, as I was just saying to Mr Patterson earlier, the thing about that was it was relatively small-scale and quite labour intensive. A lot of the capital equipment was created on site. The benefits went very much through wages and surplus returns to local residents, rather than modern goldmining, which is extremely capital intense and typically off-shore owned. So that the great bulk of the commercial gains from the project tend to flow out of the national economy. We comment to this with GDP [inaudible].

There are some projects that look bad in a cost benefit sense that turn out to have the sort of long term benefits I was speaking about before. The Clyde Dam is a classic. But back in the 1980s I was deeply involved in the "Think Big" debates where we had very similar issues of Fast Track legislation in place. Projects coming forward for evaluation, and the Clyde Dam was one of them. And on a cost-benefit basis, the Clyde Dam was extremely marginal. As it turned out, if we had known before the fact what the Clyde Dam was going to cost it would've been very difficult to have got it through, and yet once the costs had been incurred, the construction has been undertaken you are left with something that is a valuable resource, and will continue to be so for a long time.

With a gold mine, that's not the case. Once this goes through, we're left simply with the landscape afterwards and no on-going taonga if you like, from the point of view of the national economy. So there's a qualitative difference that even cost benefit analysis is going to struggle to pick up.

I would argue for putting this sort of thing into cost benefit, but [inaudible] I'm sure confirm this is not an easy matter, because the frame of reference for the development economics looking at projects is unfortunately rather different from the frame of reference that I think we have to work with here.

Mr Muir: Right.

Dr Bertram: So I'm narrowing my frame of reference from here.

Mr Muir: Dr Meade.

Dr Meade: Thank you sir. Yes. Sir, if I could perhaps just briefly offer a few comments on some of the earlier discussions and then move to some of my own particular points I'd like to raise.

Just regarding Mr Patterson, his extension of his analysis, I noted he hasn't covered off adverse impacts on horticulture and I note in particular the highly productive land affected by the project. And in the joint witness statement I pointed out this. I think his tourism assessment focused very much on what you might call low-entry tourism, but there's no assessment of aimed tourism. So I'm not convinced that we've really covered the bases properly on those assessments.

Regarding the scope of what we should quantify whether things are non-market or market, I'd note there's actually a middle ground, and this is where, and Dr Bertram's just actually alluded to it, the Clyde Dam. We know that it turned out that about $1.5 billion needed to be spent to stabilise the hills around – sorry I'm talking about Lake Dunstan. And so Lake Dunstan, there was a lot of stabilisation funding, and that would've destroyed the cost-benefit analysis if the extra funding had been taken into account, ex-ante, when decisions were being made.

But this is very much – that's not a non-market impact. There was very much direct market expenditure, in the current dollar terms, about $1.5 billion worth that should've been taken into account when thinking about building the dam, but weren't. And it was only after the fact that they got incurred and this would've been a huge burden on the project's economics.

So for this particular project, especially with the tailings storage facility, tailing storage facility sorry, we do need to allow for what do we think might be the costs, for example, if this doesn't turn out to work as well as we thought it would. What the costs of safely storing the tailings in perpetuity turn out to be much higher than anticipated now; if unforeseen events turn up in the future that mean the cost of securing those tailings suddenly escalates, these are things that are very much market costs. These are actual dollars that will come out of the taxpayer purse, or somebody else's wallet. They're not non-market assessments.

We don't have to go down the route of non-market valuations, that Dr Kaye-Blake and myself do quite a lot of. I myself practise in that area as well. We have whole branches of economics that are very committed and dedicated to working out how we do non-market valuation. So I agree with Dr Kaye-Blake this is something that can be done well. It's not that we can value everything. That's a sure. So I agree that the general principle is we should be valuing these things as much as we credibly can, and to the extent we can't, we leave the rest for qualitative assessment. That's natural in any assessment actually. But I wouldn't say that we should be pulling up short and not doing any non-market valuation, in any case, as I have just been emphasising.

There are areas that haven't been considered in the economic impact analysis. It could have very, very large impacts on the national purse, and these are market impacts. These are dollar impacts. Someone has to pay money to sure up tailing storage facilities for example, and we have in modern New Zealand history examples of the taxpayer having to stump up for looking after environmental costs and you know reinforcing damaged tailing storage facilities, or companies having to do so themselves, costing many tens of millions of dollars. And this is in recent mining history in New Zealand. And that's something that simply hasn't been assessed in the economic impact assessment, and is something that I would say is utterly critical to working out whether this is a project that helps New Zealand long-term, or it could turn out to be a massive burden on future taxpayers, our children, our grandchildren. Or actually it could be a burden on us if bad things happen even five or 10 years hence. For example, if we get another unforeseen sort of earthquake, such as the Kaikoura earthquake.

So that's just a general remark in terms of the extent of non-market values. And I'd add one other remark. I think there's a false dichotomy to suggest that non-market values are somehow ropey and market values are somehow solid, because none of us in this room can say with certainty what the gold price is going to be in one year's time, for example. We don't know. So how can we say with any certainty what the gold price is going to be in 16 year's time. That's very much a market variable for sure. But it's a highly uncertain market variable, and frankly the bounds of uncertainty I'd put on the 16 year gold price, are much higher than the bounds of uncertainty I'd put on most non-market valuations that we estimate, because we can figure out what the, you know, confidence intervals are for our non-market valuations.

So I think it is a false dichotomy to suggest that market values are all somehow rock solid, and non-market values are somehow all flaky. No, no, no, no. That can be completely the other way around, especially when we try to look at future market values as we must when we evaluate any future projects. Right. And in terms of a few examples, Dr Kaye-Blake offered, you know, value of lost load effectively for pricing electricity outages. In transport planning we use the value of travel time savings; we use the value of statistical life; this is how Waka Kotahi figures out how to prioritise its expenditures on making roads safer and so forth.

These are non-market values. We use them every day to make some very, very important decisions in New Zealand.

In terms of what the legislation requires, I think there's probably not wide disagreement, that section 3 – well section 3, on my reading, it refers to benefits. It's as simple as that. We're looking to expedite projects that have significant regional and national benefits. The "B" word is quite significant. It's not impacts. And it's very easy to come up with examples of impacts that are not benefits. They are actually costs, and I think it was mentioned before that it's probably uncontroversial that benefits means net benefits, because of course if something has a negative net benefit, then it's not beneficial. It's not a benefit at all. So we should be focusing on net benefits, and section 3 requires us to focus on benefits. That's automatically a cost-benefit analysis. That's the benefits less the costs. The only debate might be the extent of the cost that we take into account, and actually also the extent of the benefits you might take into account. Do we include non-market ones, as well as market ones, et cetera? Or uncertain ones, or just direct ones? All these sorts of things.

So when I read the legislation, it seems to be unavoidable we have to do a cost-benefit analysis, because that's what section 3 asks us to do. In terms of examples of where impacts are costs, which are the opposite of benefits, it's very easy. Just think about how much money we spend on the labour to deliver a particular project. So if we got a project that delivers a certain level of gross benefit, and one project, or one version of that project can be done with a certain level of labour, but another version of that project can be done with half the level of labour, according to the economic impact analysis, we like the one that has the high level of labour because we counting the payments to labour as being benefits. But, of course, from a national perspective that's a cost. You know, delivering the project has a cost. The labour cost is part of that. If we could deliver the same gross benefits with half the labour costs, from a social wellbeing perspective, we should definitely prefer the one that has the half the labour cost. But on an economic impact analysis frame, that would have a lower economic impact. And so that would, on the economic impact interpretation of benefits, mean that that project is somehow less beneficial. But from a social wellbeing perspective it's the ones we like. It's efficient. It's productive.

So I think we have to be very careful. I would say it is legitimate to count economic impacts as benefits if they are in fact benefits. But that's only if they are, and only to the extent that they are. But we have to be careful not to confuse cost with benefits, which is precisely what economic-impact analysis does, and so that makes it only loosely appropriate, I believe, for meeting the requirements of section 3, when cost-benefit analysis very, very directly focuses on what cost, what section 3 is asking us to do, which is to figure out what are the significant net benefits of a given project.

And where this demarcation between section 85(3) and section 3 falls, I would say actually there's an overlap and I agree with the remarks made earlier, I think, but yes sir, Mr Muir, that basically we should qualify things as much as we can credibly do so. Where we can't, there are qualitative assessments to be made. Section 85(3) I would note does use the term "impacts" and it's referring to "adverse impacts" so it's looking at a very, very wide range of things, and that opens the door on taking a much wider lens to thinking about adverse impacts.

But that said, to the extent we can credibly value either project benefits, or project costs, it seems to me section 3 requires us to do so as best we can as economists. I certainly don't agree with the idea that we should just defer to technical experts and not try and quantify these things. As Dr Kaye-Blake and myself have been stressing, we have whole branches of economics dedicated to monetising things that aren't traded in markets. It's our job to try and figure out what those things are in monetary terms. And this is precisely so we can help decision-makers, like the Panel, figure out how to compare apples with apples. Because if we're comparing, you know, monetary market benefits with qualitative non-market disbenefits, that's a hard thing to do. It requires significant judgement and subjectivity.

And having said that, if you do a full cost-benefit analysis and you do actually quantify as many things as you can, that doesn't preclude the Panel from applying whatever subjective weights it might wish to. Because frankly any decision-maker does so when they look at a cost-benefit analysis. They say, "That line item should get more weight than that line item". So that's something, you know, it regularly happens, and it regularly also happens to have certain things that are not quantified in monetary terms and you do then factor them into your overall decision on a qualitative basis. But to simply leave that area of decision-making wide open to subjective decision-making, it's hardly a systematic or transparent way of tyring to figure out what the overall project net benefits are and their significance.

Mr Muir: Dr Meade, I do need to ask you – I was forewarned that economists could be loquacious. We do need to keep an eye on the clock.

Dr Meade: Thank you sir, I will be brief in wrapping up. Yeah, so in terms of actually I concur with Dr Bertram's comments about the kind of differences between the 19th Century goldrush in Central Otago versus what this is now. Yeah that was very labour intensive. It was a gold rush. It brought in lots of labour and people developed their own capital on the way of developing their mines. Infrastructure was developed, as a consequence of rolling out this whole gold rush.

We have a different ball game now. We have a more developed economy. We have certain infrastructure in place, such as road, et cetera. We have electricity infrastructure et cetera. It's not that this mining project itself is going to spawn a whole lot of development of infrastructure that leads to enduring benefits across generations. I agree with Dr Bertram that mining these days is a labour light sort of process, capital intensive, and so even if we did have a number of other projects coming along, then the returns are largely going to go to whoever own the capital, which is often overseas shareholders. So we have to be mindful that this is a vastly different sort of context to the mining activities that happened years ago.

And just in terms of a couple of other very quick methodological points, sir, and the rest of the Panel, things like labour costs, I agree with Dr Bertram, we need to be thinking about what the alternative is. So what is the opportunity cost of labour? So we don't just count the gross labour benefits. We have to think about if we're attracting labour, what were they getting already, and how much more might they be getting if they came to this project? Because it's only the difference that we care about, economically speaking, certainly from a cost-benefit framing.

We obviously need to think about how the project puts pressures on other input markets. Whether that's housing, what other suppliers, et cetera, and we need to think about displacement effects, obviously. So things like tourism, viticulture, agriculture. We need to think about what share of the benefits actually accrue to New Zealanders because I don't believe that the section 3 test is asking us to enrich foreigners. It's asking us to figure out how much New Zealanders may be better off by a particular project.

Mr Muir: That's uncontentious.

Dr Meade: Indeed. Thank you sir. And of course I think it's also uncontentious amongst the economists, that we agree, we need to calculate things in present value terms, when effects or benefits happen over multiple years.

Mr Muir: That's uncontentious. That's uncontentious.

Dr Meade: Very good. Okay. That's all I really have to say, thanks.

Mr Muir: Yes. Thank you. Dr Lees, I think that you wanted to comment on something that Dr Bertram said before [inaudible – coughing]?

Dr Lees: Yes, thank you. I just think the decision-making context between the Think Big projects and what we have in front of us is very different. So this is a private company. If I think about the Think Big projects they were Government projects. If I'm honest, initiated largely because they were appealing to the electorate at the time.

Mr Muir: Thank you very much. Mr Miller.

Mr Miller: Yes, was there a specific question?

Mr Muir: No. Just your opportunity, Mr Miller, to comment to the extent that you feel necessary on this opening topic of the economic methodology?

Mr Miller: I have nothing to add on this. Nothing to add on the specific topic.

Mr Muir: Right, thank you. Thank you, very much. I'm going to round back to Mr Patterson.

Mr Patterson: Well there's a lot to take in there.

Mr Muir: Yes.

Mr Patterson: I think one of the things that's come up several times that I wish to discuss and that's the opportunity cost. In my opening remarks I didn't talk about the opportunity cost at all. I simply talked about the counter-factual, the land itself, which I guess is the opportunity cost of the land. If we think about it from a capital and labour perspective, I estimated that the GDP per job was about $1 million. So that's the returns to capital and labour. It's about 7.7 times the existing GDP per job in the local area. So that baseline of about a hundred, just under a $130,000 is the existing GDP per job. In my mind that is an appropriate opportunity cost had we used our capital and labour market resources to put to the existing structure of the local economy.

With regards to comments regarding you know tailing storage facility failures, so called tailing risks and how we ensure that those costs are considered, I note that that's a matter for bond adequacy, and I'm no expert in that. We've got New Zealand's premier expert Malcolm Lane on that, and I note from the joint witness statement there, that there did not appear to be issues regarding the ability of bonding to internalise some of those potential costs.

I do just want to make a couple of comments regarding horticulture and tourism, because they were very specifically raised. I responded to comments that were made by industries and by land owners in the immediate surrounding area, talking about the effects that it would have potentially on their enterprise. Within my section 53 responses, when I talked about the viticulture sector, I also specifically responded to a landowner's comments regarding the effect it might have on their olive oil business, which is another form of poly-horticulture there. So that was paragraph 109. And they were very small amounts of activity happens on their orchard, I guess you'd call it. I'm not term of the technical term for an olive grove.

With regards to high-end tourism, I've seen no compelling evidence in front of me that there is a flourishing high-end tourism market of substantial size within the Bendigo area.

Mr Muir: There are localised operators.

Mr Patterson: There might be localised operators but nothing that is of a consequential scale.

Mr Muir: Thank you. Could I come back to the Panel. Any questions, other than from Commissioner Barry on this topic?

Dr Kaye-Blake: Excuse me, I also did not – in my comments I only talked about non-market valuation, and I did not address all the economic methodology concerns. So if I could - - -

Mr Muir: Yes.

Dr Kaye-Blake: - - - do that at some point, I'd like to.

Mr Muir: Yes. Is there an opportunity that we could do this later?

Dr Kaye-Blake: Within topic 1.

Mr Muir: Within topic 1, right. Why don't you address us now then, Dr Kaye-Blake.

Dr Kaye-Blake: Thank you. So, the first thing that I'd say is that the approach that's been used, a multiplier analysis inside an EIA, is perfectly conventional and looks to be done appropriately. So there's no concern with that.

However, what we know, as economist who do this all the time, is that that method overstates the benefits of an economic project. We also know it tends to understate the costs. So if I go through the economic report, over and over what I see is that the analysis overstates the benefits and understates the cost, and that's baked into the method that's been used.

Also there's no proper risk assessment that's been done. So we've got a central analysis but we don't know what all the risks are across one hundred per cent of the likely, or the potential outcomes.

So that's about yes it's okay, but also we have to review the evidence with the understanding that we have of the limitations. And I think that's where we're not getting enough perspective on those limitations coming into the discussion, bringing in that understanding.

Just picking up on two points that Mr Patterson raised. First of all this metric about $1 million of GDP per job is a great metric. What it tells you though is that this project is far outside the bounds of what we usually see in the economy. So in the New Zealand economy we produce about $140,000 of GPD per job.

Mr Muir: Yes.

Dr Kaye-Blake: And the most productive sector tends to be oil extraction, and it produces about $500 million of GDP per job, and the Macraes Mine produces I think somewhere in that range. So to suggest that this project is somehow going to be more profitable and more productive - - -

Mr Muir: $500,000 not $500 million. $500,000 per - - -

Dr Kaye-Blake: Sorry, $500,000 yes. Yeah. It's going to be – I think there is a lot of explanation that needs to be done to explain how this particular project is going to be far outside what the New Zealand economy tends to do.

And then on the question of bond adequacy, I don't think the joint witness statement did say that we have no problems with bond adequacy. I think one of the things that did come up is that we need to have a proper mechanism to deal with long-term risks. And in theory you could value, and you could put a bond up, but we're not seeing anything that has the kind of longevity and the certainty that you would need to deal with all of the long-tail risk.

So I'll leave it there.

Mr Muir: Well, there has probably been some developments since you had your expert conference to the extent of the additional proposal from the applicant in terms of a long-term endowment of up to $50 million directed primarily at heritage and ecological outcomes.

Dr Kaye-Blake: And I have seen that. And the interesting thing about that is that one of the discussions that we economists have had, is that a limited liability company does exactly what it says. It limits the liability of the investors to the investment that they put in. And as economists we think this is a fabulous invention. It really kicked off economic development in the 18th Century or when the historians can tell me about when it started, joint stock companies. Curiously what this trust does is exactly the same thing. It limits the liability of the company to $50 million. So they know going into it - - -

Mr Muir: Well no, it doesn't because if it operates in a complementary way with the bonding. And the bonding is a direct cost to them whether it's achieved through an insurance policy or it's achieved through bank guarantees, it is a direct and on-going cost.

Dr Kaye-Blake: I've not read – the material that I've read does not suggest that it works that way. I'm not sure that the bond covers all of the risks that have been identified. So that's - - -

Mr Muir: Well probably we, as a Panel, with our combined expertise on the Panel will have a better – are obtaining a better basis to ultimately assess those risks than any of the economists in this room, because we have – we are being exposed to, and have actively inquired into, all of the significant risks, whether they are ecological, whether they are of catastrophic failure of tailings containment facility, whether they are of contamination to ground water, or all of the other identified risks that this project brings. And from an economist's point of view, do you accept that we ultimately need to make an assessment of where those risks lie, and then an assessment of adequacy of bond or other facilities to address risk?

Dr Kaye-Blake: Absolutely, and I've not been exposed to all of that material. So that's not my decision to make.

Mr Muir: Yes. Right. Mr Patterson was there anything out of that, that you wish to respond to?

Mr Patterson: Just that it's good to hear that it's deemed that the way that the multiplier analysis was done was appropriate with regards to that. I've deliberately taken a very conservative approach with the multipliers. More conservative than other analyses of this nature, such as those that supported the Waihi North decision, or other like that had been done on Macraes. I took a more conservative multiplier analysis approach.

What I would stress is that through the process of our expert conferencing we have considered the prospect of displacement effects. So we haven't been blind to the fact that you can displace resources, or you need to consider that there's adequate capacity to be able to allow for them. So those are things that we're going to get onto later on, such as labour sourcing and housing.

With regards to the GDP per job, it's spelt out quite clearly where that calculation comes from and fundamentally it is a function of the gold resource that is in the ground and it is being assessed through the process of geological testing, combined with expectations from the applicant of, you know, the cost of extraction of that, the manning, the capital that they will require in doing so. And it is not out of synch with what we're seeing for other gold miners. I haven't been able to immediately find the most recent figures for 2025, but I note from my original report Macraes was looking at over $730,000 of GDP per job back in 2024. So that is not out of the same realms of what I've come up with in an entirely independent process to those estimates.

Mr Muir: Commissioner Barry.

QUESTIONS FROM THE PANEL:

Mr Barry: Thank you. Two general questions. The first one is for Mr Patterson. What is the unemployment rate currently in the Central Otago region, just order of magnitude?

Mr Patterson: Order of magnitude is between one to two per cent.

Mr Barry: Very low isn't it?

Mr Patterson: Very low.

Mr Barry: And I think your own evidence points to a survey the company conducted that around half the employees, half the 380 whatever new jobs are going to be created, are likely to come from within the Central Otago region. Is that correct?

Mr Patterson: The applicant did a survey of people that had expressed interest in having a job and that's what it showed, approximately.

Mr Barry: Would you agree then it's likely that those people would already have jobs at the moment?

Mr Patterson: I do. Do you have a follow-up on that, or should I continue?

Mr Barry: Well I'm just really, as I know you can guess, I'm just trying to get a sense for how much weight we should put on the multiplier analysis on the economic impact estimates of GDP growth, given they, as I understand it, do not take into account the fact that some of those workers that will be employed at the mine will have a job already, and that that will be a cost that is not take into account in the GDP numbers you've given us.

Mr Patterson: So the Otago Central Lakes or Inland Otago, I've reflected them as Inland Otago. Sometimes in Government now it's referred to as Otago Central Lakes, which is the combined area of Central Otago and Queenstown Lakes, it's a very distinct economy from the rest of New Zealand. Over the past couple of years, or three years essentially, where the New Zealand economy has been in a recessionary like environment for much of the time, we have continued to grow in our local area.

And what you see is that there is always a very high level of demand for people to move into the local area, and any jobs that get created in industries they do tend to be filled. There's very rapid population growth. So I would anticipate if some of these workers move from established roles into the mine, that their vacancies will be filled with other people.

One of the perpetual challenges related to this, and I guess we're pre-empting this part of the conversation, but I think it's important to put on the table now, and that is housing. And the Inland Otago area, and I guess this is pre-empting another conversation but I need to weave it in here, which I view is the relevant labour market catchment, it builds houses like nowhere else in the country. If you look at per capital building consents, it's about four times the national average. In the past 12 months we have consented more than 2,000 new dwellings. The long-term average is about 1500 dwellings a year. So we've jumped very, very substantially in the short run, and those 500 new houses, if they're built within one year that theoretically internalises the sort of – if we took the extreme of thinking a one for one relationship between new house needed for each worker. This is before we consider the prospect of further increases to the rate of delivery of houses in the local area through Fast Track applications for housing.

In Central Otago itself, for example, there is the Parkburn housing development which has over a thousand homes. We have eight or nine other fast track housing developments that collectively offer the potential for more than 10,000 homes above and beyond what is being you know estimated previously in the local area.

Mr Barry: I'm conscious of time.

Mr Patterson: Sorry.

Mr Barry: So maybe just a yes/no if it's possible. Would you agree, given the joint witness statement recognises the displacement effects, would you agree that the economic impact analysis numbers in your report overstate, are likely to overstate the net benefits to the national, and even the local economy?

Mr Patterson: With the national economy there are a certain number of people that would be coming into New Zealand for the roles.

Mr Barry: Three per cent, or something, I think it estimated.

Mr Patterson: I think that was the non-residents. It was about 15 per cent that would be coming in. In the local region I would expect that you know roles that were – local people moved into at the mine, that those would be rapidly absorbed by people that came from other parts of New Zealand, or that came in from overseas. To put a figure on the sort of migration that we see into the Inland Otago area over the past decade we've seen about 23,000 people move into the area. Over 2,000 a year, and there's a split between internal migration and international. Yeah.

Mr Barry: So was that?

Mr Patterson: I guess what I'm saying is that there would be an element there, but I wouldn't say it's fair to say that you would completely net off that baseline, because some of it will be filled.

Mr Barry: So I think just to translate that, I think you're – and not to put words into your mouth, so please disagree – but I think you're saying that yes the estimates of the GDP effect probably overstate somewhat the true net benefits to New Zealand?

Mr Patterson: I would say that but it's not to the full extent of the opportunity cost.

Mr Barry: Yes.

Mr Patterson: The opportunity cost essentially would be the upper bound of what you would net off, but I don't believe it would be the full opportunity cost, yeah.

Mr Barry: Thank you. And the second question is really to all the experts who would like to comment, and it's really around how we best measure the net welfare effects? And let's just limit it to monetary effects. We've heard some of the limitations of economic impact analysis and also the insights we can get from it. We've heard about the limitations of GDP as a measure to some extent of the net welfare effects as well.

And there is another measure, of course, that is quite commonly used and recommended by the New Zealand Treasury, which is the impact on what we call producer surplus and consumer surplus, and therefore social surplus. Producer surplus is simply the profits from the mine, less all the costs, including the cost of capital. And effectively I think that is the measure that the Panel has been provided with in terms of the pre-feasibility study where it talks about the MPV of the project using an eight per cent discount rate, a number of about $700/$800 million I think was the number. Is that a -- $748 million for the MPV of the project at that eight per cent Treasury discount rate. Is that a measure that you know we could have some regard to as a meaningful measure of at least part of the national benefits, that impact on producer surplus?

Mr Patterson: If I could respond quickly and then I'm sure the others might have a view. That project surplus considers only the MPV of the returns to the capital owners, essentially the shareholders. On top of that we also have the potential returns that accrue to Government through taxation and royalties. We also have the potential returns that accrue to the workers in the form of labour market income. And the legacy effects of having that higher labour market income, that that can potentially have on your household worth, was having higher income enables you to have a higher savings rate.

So while I primarily followed a GDP approach, which is a production based approach essentially to measuring it across capital and labour, I would be more – I would think a more holistic way, if you're considering the benefits to New Zealand as distinct from the production, that was the conversation we had around GNP, gross national product.

I don't think that tells the whole story though. That tells us how much of that GDP essentially would accrue to New Zealand owned assets and employees. I think we should completely discount foreign ownership because like at present that foreign ownership is taking on a lot risk that ultimately if we get through this consenting phase, and get operational, that helps to enable those subsequent benefits that accrue to New Zealanders.

I'd also caution that even if in some circumstances we're interested in the GNP effects, we need to be cognisant that other baseline measures of the existing size of the regional economy, of the potential outputs of the tourism, or the viticulture sector, if we're considering those issues, that those are fundamentally under GDP, or GDP-like basis, rather than GNP. And if we think about things like viticulture, for example, in surveys that have been done by Central Otago District Council, which COWA has been a party in helping to facilitate, they showed that three-quarters of employees in the viticulture sector are temporary workers that are foreign workers, as opposed to the expectation where essentially all of the workers on this project would be New Zealand residents.

Mr Barry: Thank you, that's very helpful. And I should've qualified it, that the producer surplus would certainly have to be discounted for the effect of foreign ownership. So quite substantially discounted by about you know 61 per cent if 39 per cent is foreign owned, sorry 39 per cent is New Zealand owned only. Any of the other experts have a view of the usefulness of producer surplus as a measure, taking into account Mr Patterson's other comments too, that you'd need to consider the impact on Government revenue, and workers.

Dr Kaye-Blake: If I could? So we know that the method that's been used, multiplier analysis, overstates economic impacts. So having other figures that you could look at to get a sense for how much the over-statement is, are helpful. And so looking at producer surplus, having regard for it, maybe not treating it as the number, but having regard for, would be a good way to correct some of the over-statement from the EIA.

Mr Barry: Thank you.

Dr Bertram: Essentially, I think I agree with you. But I'd frame it slightly differently. What the project does is creates a product out of New Zealand land, which is sold on the international market. So therefore it earns export earnings. So we get expert earnings of so much, and the issue that arises, is of that flow of expert earnings how much accrues as a net gain to the various factors of production in the New Zealand economy. Yes, for labour it will be the extent to which labour earnings are above the reservation wage, whatever that may be. For the Government it will be the addition to the fiscal – revenue received by Government net of any negative effects that may arise elsewhere in its revenue expenditure. And for the capital, it's the return on the investment by New Zealand owners only, because we're not in the business of enriching overseas owners necessarily.

I don't agree with Mr Patterson that one needs to give credit to the overseas owners taking the investment. They are taking a risk as commercial operators do, for which they expect to be rewarded adequately. I don't see any need to subsidise them in that endeavour. So I would limit the analysis very rigorously to the quantifiable gains to labour, capital and Government within New Zealand. And I would then be looking, firstly – that's for the static gains, if you like, the extent to which you raise, year by yearly, the economic returns to those factors of production.

I would then be looking to see whether there is an add on in terms of spread effects from the activity. Whether it's generating a lot of additional growth, technological innovation, restructuring of some key parts of the economy, and so on, whether you established a bit of new infrastructure. In this case, I think we can strip all that away. I don't think there's any of that in this case. It purely comes down to the one-off year by year static gain.

So I'm basically with you on the essentials of the analysis.

Mr Muir: Yes, Ms Hampson.

Ms Hampson: I was going to query the producer surplus until you qualified that it would exclude that foreign ownership component. I think it kind of depends on if you're trying to understand the context of national benefits, then there's certain measurements that might be more useful, like GNP at a national level. If you want to understand the significance of that, and you might need to think of other ways to understand regional, significance of regional benefits, because those measures are different.

In terms of regional benefits, I agree with what's been discussed. I think it's the wages and salaries that accrue to the region, and the expenditure with businesses. So the procurement of goods and services that can be tied to that region. I think those are tangible ways that the economy, you can measure a significance on the economy.

Direct employment I think is a useful one. I think in terms of some of the – and Mr Patterson has covered it – there are limitations to multiplier analysis. But the direct GDP calculation in his report are not influenced by the limitations of multipliers. But they do include a foreign ownership component. So I think it's a useful starting point, assessed within the context of what it's telling us.

Mr Muir: Did Dr Meade or Mr Miller have any comment on this?

Dr Meade: Yes, thank you. Thank you sir, and in response to your question Mr Barry, I think yes it's legitimate to think about the New Zealand share of the change in producer surplus as being a component of the change in welfare. And, of course, that's allowing for the opportunity costs. So the loss of profits from displacement effects, and so forth, as well as just the profits of the project, or changing profits of the project.

In terms of doing a comprehensive welfare analysis would, of course, have the change in consumer surplus as well as a consequence of the project. And if we are thinking about consumer surplus, this is inherently something that can only be assessed through non-market valuation. We don't – we can't actually assess consumer surplus by looking at prices and markets, per se. We need to actually do more work to get there. And so this is where EIA could shed no light at all on the consumer surplus impacts, whereas cost benefit analysis would ask us directly to try and do so. And once we do - - -

Mr Barry: Mr Meade sorry to interrupt, but I mean given this project, gold is all exported, is consumer surplus really that relevant here, leaving aside non-monetary values?

Dr Meade: Well this is actually what I was about to get to. In terms of the direct consumer surplus benefits you'd say it goes to overseas buyers of gold, and so we don't really care from a New Zealand wellbeing perspective. But because thinking about consumer surplus is inherently thinking about non-market values, and it is inherently thinking about subjective preferences, right, because demand is based on people's preferences for things. Those preferences are subjective, so when you're measuring consumer surplus, you're trying to measure people's subjective preferences.

So while the direct subjective preference for New Zealanders towards buying gold would be largely irrelevant in this project, unless they're kind of buying that gold back somehow in the future, there are various other subjective preferences that are impacted by the project, such as ecological, heritage, cultural, et cetera effects that will need to be taken into account.

So I think that kind of opens the door on that wider conversation and I agree with Dr Bertram that we shouldn't double count the benefits to the shareholders from investing in New Zealand. They're doing so because they expect to get more than their weighted average cost of capital back, in risk adjusted terms. Well they're not doing it because they're as charity. So I think it's specious to suggest that we should somehow be saying, "Thank you overseas investors for pouring all this money in" because they're going to take more money out than they put in, otherwise they wouldn't be doing it. It's as simple as that.

And the other thing I would point out too, is that the overseas investors, they get to take the upside of any wins they get from the mine, but because of the limit of the liability structure they can walk away from any downside losses, and that means that they could end up socialising cost to the New Zealand taxpayer in the future, if it turns out there are significant costs that need to be dealt with that the shareholders decide they don't want to account for.

I think this will come up again in section 4, where we talk about addressing key risks and uncertainties. Thank you.

Mr Barry: Mr Miller?

Mr Miller: Nothing further to add.

Mr Muir: Very good. Cross-examination on this topic? Where angels fear to tread.

CROSS-EXAMINATION BY MS GEPP:

Ms Gepp: I just have – I have one question I think for Mr Patterson and Dr Lee, same question. Thinking about the extent to which non-market impacts are needing to be assessed in a qualitative sense by the Panel, I'm looking at paragraph 74 of the joint witness statement which talks about research showing that decision-makers are more likely to take environmental impacts into account if those impacts are expressed in dollar values. And that's something that Dr Kaye-Blake has identified a research paper on, and then Richard Lee has agreed with that.

So with that in mind, if the Panel is presented with a mix of quantified economic or market impacts and non-quantifiable non-market impacts, is it – would your advice to the Panel be just that they have to keep in mind that there is the potential for that discounting of non-quantified values?

Mr Patterson: I'm sorry could you please rephrase that? I didn't completely understand.

Ms Gepp: All right. So are you aware of the – so you got my reference to paragraph 74?

Mr Patterson: Yeah.

Ms Gepp: And at the end of that paragraph there's a reference to research that decision-makers are more likely to take environmental impacts into account if those impacts are expressed in dollar values.

Mr Patterson: Yes.

Ms Gepp: So with that in mind, and given what we have at the moment is a mix of quantified economic impacts and some non-quantified other impacts, would it be important for the – would your advice be to the Panel to keep in mind the potential for essentially decision-makers to discount the value of non-quantified impacts, and to factor that in when they're undertaking their overall assessment of this project?

Mr Patterson: Thanks for that clarification. So I wouldn't in any situation be suggesting to the Panel to discount looking at those environmental impacts. I was simply saying that I believe that when there's relevant technical expertise that's very well versed in these matters in terms of describing the risks and potential nature of those impacts using the means of a different discipline, that I would recommend taking that approach.

Look I do have some sympathy when it comes to environmental impacts in terms of quantification if there is a direct line of sight into an industry type impact, and it was for that very reason that I responded to comments related to the tourism sector and the viticulture sector when comment is in that space and I was responding to this in my section 53 responses, made claims that potential environmental effects from the mine would have an effect on the operations within their industries. And so I quantified a lower bound by zero effects, right up to an upper bound of because there is a mine you have to cease operating completely.

Now I don't for a second say that that's the scenario on the table if the mine is operating within the bounds of its consent, and in fact I presented information from the Hunter Valley which demonstrates that while it being an awkward co-existence, tourism, viticulture and mining do co-exist operationally in extremely close proximity to one another.

So those are the sort of situations where I certainly see there being a line of sight between the potential environmental effects and industry that you can quantify in terms of the outputs of those industries.

Ms Gepp: Can I just have one more go at asking you that question because that's not quite what I was asking. My question was, would you – decision-makers need to keep in mind don't they, that there is research showing that non-quantified impacts can be valued by decision-makers lower than quantified impacts? So that decision-makers would need to be alive to the risk of inappropriately valuing non-quantified impacts in a less, as lower than quantified impacts?

Mr Patterson: I don't see that risk, if the Panel is being well-briefed by a technical expert in that discipline in great detail. I struggle to sympathise with that view.

Ms Gepp: But isn't that what this research is saying, that I've pointed you to?

Mr Patterson: I haven't agreed with that research.

Ms Gepp: Oh you don't – you disagree with that?

Mr Patterson: I didn't put my name to that. I've never seen that research before. It says BK. My initials are BP.

Ms Gepp: No I understand that. That's not the point. This is a joint witness statement. Somebody had raised a piece of research. You haven't gone away and had a look at it?

Mr Patterson: I haven't looked at that research.

Ms Gepp: Right, okay then I can't take that any further. Dr Lees, the same question to you. Decision-makers need to be alive to the risk of under-weighting non-quantified impacts?

Dr Lees: I haven't read the research that you've referred to. I have no particular direction for the Panel on this.

Ms Gepp: Right, okay. Thank you.

Mr Muir: Could I just ask Mr Patterson. Is there a possibility that by trying to attribute a dollar value to some of these impacts, you end up taking less notice of them than you might otherwise? Just take, for example, you tried to monetise in some way the heritage impacts of this proposed development. You can be terribly critical of my very basic methodology. But if one started off by trying to identify how many people visited these heritage sites in the valley and did your analysis over a period of one to two years, and then you attributed some notional value to what they would be prepared to pay to inspect that heritage site, and then you did an MPV value on that, I suspect you might end up with an extremely small number, which could have the opposite effect to what counsel is suggesting. You might then discount, more readily discount the impact that these heritage impacts have. This is the problem I see with monetising some of these, or attempting to monetise some of these issues.

Mr Patterson: All I'd say, with regards and yes to your specific example is there you would only monetise the effects to the extent it was potentially linked to I guess an outcome that affected the market. So with regards to that example, when it comes to heritage visitation, you would be considering the potential effects from a visitation point of view that flowed through into visitor spending. So visitor days that were associated with it. When it comes to visitation to an area, we have a certain amount that is heritage and recreational value that accrues to local residents, and a certain amount that is to visitors of the local area, and it's precisely for that reason. When it comes to things like heritage or when it comes to recreation, then I think it's better to delve into the details of relevant technical experts in those fields than simply have it fall down into an economist's estimate.

Dr Meade: Mr Chair, sorry if I could perhaps comment on that.

Mr Muir: Yes.

Dr Meade: Thank you. So in my main report I referred to the total economic value framework which sets out a range of values that economists tend to attach to things like heritage and culture and other things, including market things. The example you provided sir, is what an economist would call direct use value only. And so if a Panel member was being systematic about thinking about the values attaching to things like heritage, it would look beyond simply direct use value, of it only valued direct use value [inaudible] at least acknowledge that there are a variety of other values that should be attached to the particular activity, such as existence value, bequest value, option value.

And existence values can be very, very widely held. So, for example, there are a lot of Aucklanders who like the idea of there being a pristine Central Otago. So they place value on the existence of an untouched Central Otago area. So if you only value the direct use value of people who actually visited tourist sites you would necessarily be capturing only one part of the total value that attaches to the relevant heritage.

And so as long as one's being systematic about this, one should be recognising whether they are only valuing part or all of the various values that can be attached to the particular activity. And I also point out sir, that obviously if a subjective assessment is being made, it's quite plausible to either over or under-value the heritage value subjectively. So at least the total economic value framework and non-market value approaches is a very systematic and transparent way to try and figure out what you have valued and how you've valued it. Whereas if you were to only subjective approaches, it's much harder obviously to test those things.

Mr Muir: I have a concern Dr Meade that if we had – if this proposal had been advanced on the basis of such a cost-benefit analysis that we would've had to dedicate four or five days to this concurrent hearing. So [over speaking] these margins. Right. Okay.

CROSS-EXAMINATION BY MS VELLA:

Ms Vella: Sorry sir.

Mr Muir: Oh sorry, further cross-examination. I'm sorry Ms Vella, I didn't catch your eye there.

Ms Vella: No, probably because I'm not wearing my glasses, so I can't see yours. Mr Patterson, do you have experience in non-market valuation of the kind described by Dr Kaye-Blake and Dr Meade?

Mr Patterson: I have some experience.

Ms Vella: So you would agree with them, wouldn't you, that there are ways and methods of undertaking the non-market valuations of the kinds they've described, and of the importance of doing so for a whole range of decision-makers?

Mr Patterson: What I said before was that there are techniques that you can use in this situation. I don't think that they're the most appropriate to make use of, and that's especially because I believe there is significant methodological differences between different, you know, different approaches that could lead to quite a wide range of values.

Ms Vella: But you do agree there are techniques? You accepted that?

Mr Patterson: Yes.

Ms Vella: You also accept that the economic impact analysis approach is not a perfect approach for quantifying the benefits of the project?

Mr Patterson: It's not, and for that reason we have discussed some of the potential limitations, some of the potential displacement effects. And we address those at length during expert conferencing.

Ms Vella: That's all right. And you agree with Dr Kaye-Blake's comment that he made earlier, that we know the multiplier analysis over-states benefits. So having other figures -- which I think was a reference to Commissioner Barry's comment around producer surplus – having other figures to look at to get a sense of those benefits is helpful. Not treating them as the number, but having regard to them is a good way of checking the multiplier analysis?

Mr Patterson: In answering this I referred with what Mr Hampson said earlier that the multiplier analysis is looking at the indirect and the induced flow on effects rather than the direct effects. So I don't think we should conflate the two. When I calculated the direct GDP effects, as I said earlier, that was based on – you know GDP is essentially a production concept of the total value added from production of something. I do have some sympathy with wanting to understand the flow of benefits, and that's why in my section 53 responses, and my responses to the Panel RFI, I estimated GNP to sit alongside the GDP calculations. But I do again want to express caution that that same baseline is not available to us for all other comparisons.

Ms Vella: But Ms Hampson also said that if you're understanding the context of national benefits, you could use GNP and you might need to think about other ways of thinking about significance of regional benefits. And a useful and the, sorry the multiplier analysis is a useful starting point to assess within the context of what it's telling us. But what she's really saying there, and what Dr Kaye-Blake was saying it that, you can take your multiplier analysis but recognise that it's not perfect, and have regard to other matters in moderating your consideration of that figure or approach. Is that correct?

Mr Patterson: That's correct, and that's why we were looking at things like the displacement effects and when it comes to regionalising concepts such as GNP in this situation, we have – we do struggle to be able to understand the ownership from a regional perspective, particularly when it comes to institutional investments. We're able to narrow down very specifically New Zealand owned ownership, but regionalising that into an Inland Otago concept is more difficult. What we do know at the core, is that those employees will be based in the local area, and I agree with Ms Hampson's comments regarding the supply chain effects from procurement from other local businesses. The challenge with that is, I guess, seeing precisely what those will be at this stage, and that was precisely one of the reasons why there has been a lot of debate as to the overarching scale of multiplier effects that we would see.

Ms Vella: But you would agree, wouldn't you, that there are limitations in the analysis, and what you're having to do, and what these experts are having to do for the Panel, is to explain those limitations and provide different ways of considering the economic benefits in light of those limitations?

Mr Patterson: That was the focus of most of our expert conferencing - - -

Ms Vella: Exactly.

Mr Patterson: - - - was mostly that.

Ms Vella: Exactly that. And so - - -

Mr Patterson: But not because there were – there's limitations in any form of economic analysis. Many other approaches can get very highly theoretical and are not necessarily very practical to implement in a local economy where there are some limitations of data. And so we were working to the best of our ability to identify the limitations we'd seen and to investigate and explore them.

Ms Vella: Thank you. And if you were to adopt techniques for valuing those non-market valuations, you would have to adopt the same approach in terms of advising the Panel wouldn't you? You would advise on the limitations of that approach to the best of your ability.

Mr Patterson: In the situation of straying into areas that ultimately are driven by other disciplines at the core, we would have to advise on the limitations of what we had done. But the reality is that quantifying many of these potential effects, you know rely on other disciplines to be able to determine and come up with the scenarios. And I haven't seen those presented to me in a manner that lent itself to quantification.

Ms Vella: So you haven't seen the assessment of environmental effects on ecology or landscape?

Mr Patterson: I haven't been presented to scenarios after mitigations that would lend themself to me quantifying them.

Ms Vella: One of the – if I could just pick up on a couple of the reasons that you've expressed for not quantifying those effects. One of them is to avoid double-counting, is that correct? And a yes/no answer would be appreciated, because I think we could stray off into areas we don't need to stray.

Mr Patterson: Yes.

Ms Vella: Thank you. But you could advise the Panel around the limitations of double counting, so that they were able to consider that in their decision-making, is that correct?

Mr Patterson: Theoretically, yes.

Ms Vella: Thank you. In your RFI response you raised another concern around that, which is that, in terms of environmental effects the mitigations are generally designed to essentially have a zero residual effect. Do you recall that?

Mr Patterson: Yes, I do.

Ms Vella: And you're aware that in this particular case the applicant acknowledges that there are several residual effects that remain significant.

Mr Patterson: Not directly.

Ms Vella: Despite mitigations in relation to landscape?

Mr Patterson: I'm aware of the landscape. I'm aware of that.

Ms Vella: And in relation to ecological effects?

Mr Patterson: I don't have any comment on them.

Ms Vella: Okay. So that concern of yours doesn't apply in this particular case, does it?

Mr Patterson: In terms of the ecological effects, my concerns lay with responding to the comments that have been put forward to me about potential effects on tourism, and on viticulture, as a result of ecology. But in terms of other effects beyond those, I haven't had any in front of me to consider.

Ms Vella: So you haven't considered the potential value of the significant adverse landscape or ecological effects?

Mr Patterson: No I haven't.

Ms Vella: And you haven't been asked to consider those?

Mr Patterson: No I haven't.

Ms Vella: But you would accept, wouldn't you, that there are mechanisms to value those effects, such as the one set out in Appendix A in Dr Kaye-Blake's evidence, particularly in relation to wetlands?

Mr Patterson: Not in all cases. In some cases there may be potential methods available. But I would again suggest that I believe that it is better for technical experts in those fields to address those matters.

Ms Vella: But you do accept that Treasury has determined the value of a wetland by identifying the cost of replacement?

Mr Patterson: Treasury does have a social impact database that includes a wide variety of impacts within it. Not all of – I can't speak specifically to that particular one, but there's – they come from a number of different sources.

Ms Vella: In terms of – I'm just going to take an example here – the ecological adverse effects, the way that the ecologists have quantified those, or qualitatively assessed those is by identifying the values and essentially popping the values and the effects through a matrix to come out at the end with a qualitative overall assessment of residual effects. So the matrix either pops out a low, a moderate, a high, or a very high adverse effect. When you get to very high, that's the end of the road.

And so when it comes to threatened species, you may have assessed the effects on a particular vegetation community as very high, particularly because it includes threatened species. When you subsequently identify further threatened species in that vegetation community, the effect remains very high, because you can't get any higher than that coming out of the matrix. I understand you haven't reviewed those assessments. But in that case, could you see that valuing in a quantitative sense those effects, or the impacts on those threatened species might assist the Panel to appreciate the predation I suppose, of those effects within the ultimate very high assessment?

Mr Patterson: I don't understand how an economist could give the richness to that situation that it deserves. I believe that would be outside of my area of expertise.

Ms Vella: Despite Dr Meade and Dr Kaye-Blake's evidence that this is an economist's job to assess those non-market values and assist decision-makers to make decisions about those?

Mr Patterson: I've expressed extreme caution in considering non-market values and quantifying them. They've taken an extremely expansive view in that space which I don't agree with. There's a big difference between theoretical economics and practical implementation in a regional environment. And I don't agree that it's appropriate for economists to be as expansive as their view would suggest.

Ms Vella: Thank you. Thank you sir.

Mr Muir: Yes. Any other cross-examination?

CROSS-EXAMINATION BY MR LECKIE:

Mr Leckie: Just some short questions sir - - -

Mr Muir: Yes.

Mr Leckie: - - - for Dr Kaye-Blake. It's a slightly theoretical line of questioning if I may, Dr Kaye-Blake. So you're familiar with section 3 of the Act, by the sounds of it. You were referring to it earlier, the purpose of the Act.

Dr Kaye-Blake: I'm somewhat familiar with it. I couldn't - - -

Mr Leckie: I can read it out. It's quite short.

Dr Kaye-Blake: Yeah.

Mr Leckie: The purpose of the Act is to facilitate the delivery of infrastructure and development projects with significant regional or national benefits.

Dr Kaye-Blake: Okay.

Mr Leckie: And regional and significant regional or national benefits aren't defined terms. Listening to your responses, as I understand it, in terms of looking at those benefits and disbenefits, your view is that it's not insurmountable, from your perspective, for those to all be monetised. Have I captured your fundamental view correctly appreciating there's some nuances?

Dr Kaye-Blake: Yes.

Mr Leckie: So taking that approach, that all of those benefits, or disbenefits can be monetised, and then applying that to this quite challenging test before the Panel of significant regional or national benefits. Do you not think it would've been simpler, taking that approach, for Parliament to have just defined those terms with monetary values, for the Panel to then test those aspects against?

Dr Kaye-Blake: That question to me is a question about legal drafting, and the workings of Parliament and that's not my expertise.

Mr Leckie: So taking your approach, if those terms were defined in monetary terms, is it your professional opinion that an outcome from this project could, in a robust way, be tested against a defined monetary definition of significant regional, or significant national effect? Would that be possible? Would it be possible for them to be monetised defined terms within the Act taking your monetisation approach?

Dr Kaye-Blake: I'm not quite sure of the question. So, yes we could monetise the impacts that have been discussed. Or let me take this different approach. There is something called "cost benefit analysis" and the steps for cost benefit analysis are well established. So NZIER uses a 10 step CBA process and that is one that we apply consistently, and it gives you a way of going through and identifying the people who'd be affected, what those impacts are, quantities of the impacts, the monetary values of the impacts and so on. And so we could go through that standard process and come up with a net value, on the one hand.

Now if I understand your question, you were asking about we could then compare it to a test. We could absolutely compare it to a test if somebody set the test up for us.

Mr Leckie: That's helpful. Thank you for explaining that. And in that scenario, would there be any impacts or effects left that would need some other form of assessment that couldn't be monetised? Or is your position that every relevant benefit and impact could be monetised in that scenario?

Dr Kaye-Blake: So I'm not taking that extreme position. I do accept, as Mr Patterson has indicated, that some of these are too nuanced or complicated. And as Dr Meade has explained, there is the total economic value framework that allows us to break down value into these different buckets. Some of those you would value, some of those you would not.

I think where we differ, that is between myself and Mr Patterson, is how much work should have been done already. Because although he has referred to expense, I think some of this stuff could have been done already. If you're looking at a project that's going to have profits in the billions of dollars, you could spend a few hundred thousand dollars trying to understand some of these impacts a bit better, quantifying them a bit better. And that's the realm of the expense that we're talking about.

Some of the other things, so again taking the total economic value framework, some of those would be extremely difficult to value, and some of them would be extremely expensive. I just differ on where that line should have been drawn between me and Mr Patterson.

Mr Leckie: So if we take one example and then I'll move on. Would something like TSF failure, that was mentioned earlier today, would your advice to the Panel be to look to a geotechnical engineer to understand that risk, rather – and potentially the value of that – rather than an economist? Would you agree with that as advice to the Panel?

Dr Kaye-Blake: The risk of that failure has three parts to it. So one part is the probability. Second part, is the physical impacts of what happens. And the third part is the value of the physical impacts. So you need all three numbers to make a proper economic analysis. And I accept that I want an engineer to tell me about the likelihood that it might fail. And I've not seen that likelihood come through in the economic analysis. I would like an engineer to tell me about the physical impact. So where the water goes, where the rock goes, that sort of thing. But the economist's job is to explain the value of those impacts should they occur. And that's where I'd want the economist involved.

Mr Leckie: Thank you. That's helpful. Thank you sir.

Mr Muir: Thank you. Commissioner Barry, any issue arising out of the cross-examination?

Mr Barry: No, thank you.

Mr Muir: No, thank you. We'll take a break now for 15 minutes. Then we'll start on the second issue, and probably run a little beyond one. Thank you.

Morning adjournment

Mr Muir: I'm sure all the economists will be very pleased to hear that primed by the discussions this morning, we have subjected the extravagantly iced muffins to a multiplier effects analysis with a more favourable outcome. Right. We now move onto the key assumptions, including gold price, and the sensitivity. Can we start with you please Mr Patterson. So just outline what you regard as the key assumptions and the sensitivities.

TOPIC 2: KEY ASSUMPTIONS – BASE/UPPER/LOWER CASES, SENSITIVITY ANALYSES AND/OR OTHER SCENARIOS

Gold price:

Mr Patterson: Look for me the matter that I primarily wanted to discuss, noting that we have actually discussed some assumptions, at least methodological assumptions throughout the course of this morning, I want to focus on the gold price assumptions in the analysis. And, in my initial report I had simply taken, you know, essential scenario of the gold price, which was just over US$3,000 an ounce. In response to the section – in my section 53 responses, alongside that, well I'll be specific, $3,138 an ounce scenario - - -

Mr Barry: So US dollars, or - - -

Mr Patterson: US dollars, yeah, I considered two other scenarios. One of them was $4,700, a high side scenario. That was – that is broadly consistent with the current gold price environment that we find ourselves in at present. And I did a low scenario of US$2,220 an ounce. So, you know the low scenario is about 60 per cent or so below current pricing that we're seeing in the market when I prepared my section 53 responses.

So this major difference between the low and high side scenario was designed to demonstrate potential effects that we could have on the GDP and MPV from the project.

So in terms of this lower scenario, that was around 60 per cent lower than where gold prices sat at the start of the year, I noted as part of the joint witness statement that there was only one other time in the last 100 years that we've seen gold prices fall by at least that much. They fell in a relatively short period of time in the 1980s. And then if you look, you know, a decade after the peak, they'd sort of remained at that level. So there is one time that it occurred in real terms and sustained it over a decade long period, of that sort of order of magnitude.

Now I acknowledge that prior to 1971 we had the Bretton Woods system, so you know there are potential some, you know, some differences there obviously in terms of what could have happened to gold prices before that point. But certainly since then there's only been one other instance we've seen that sort of level of gold price volatility in real terms.

So I guess, you know, a few reasons why I believe that that lower gold price scenario, which is less than half where we're sitting at present, is a plausible downside scenario. For one, you know, I do know that Matakanui Gold Limited, it's cognisant of protecting to some degree any downside in pricing and so understandably it's exploring hedging options for some of its production. If we look at futures contracts for hedging they are at and around sort of current gold price levels, right through over the next two years.

Now in outer years of those futures contracts there is very low trading volumes, in some cases none. But certainly there are traded volumes of gold futures above $4,000 an ounce, and in some cases above $4,500 an ounce, right through to mid – right through to 2029.

Some other information that I've recently become aware of is actually from consensus forecasts prepared in late April. So consensus forecasts is essentially an aggregator of information from economic consultancies and investment banks globally on their forecast for where various economic variables will sit in the future.

Then if you look at real prices for gold, right through to 2035, the average from those consensus forecasts right through to 2035 was US$3,300 an ounce. So that is just over five percent above the mid point of my assessment. And the range of views there, were between $2,500 an ounce, through to $4,870 an ounce. So my low side scenario is actually about 10 per cent below those consensus forecasts, and my high side scenario is also a few per cent below the high side of those consensus forecasts. And that had 12 major institutions that have responded to that survey, including organisations like Morgan Stanley, UPS and Macquarie.

So yeah I guess that's all I'd like to share on gold prices.

Mr Muir: Dr Lees.

Dr Lees: Sir I can offer some points. So the first point that I'd make is the gold price is exceptionally volatile. So it's no disappointment, or no great revelation that there's disagreement across some of the experts on what those prices should be.

When I look at the gold price I see a kind of a case for a higher gold price than some of the other experts. That's based on a few things. Certainly based on when I look at, from an econometric kind of perspective, how fast the gold prices come off over time in the past. It's certainly a very slow kind of mean reverting process. So part of that goes to the nature of gold. And it's unlike other commodities. It's certainly not used to the same extent in terms of industrial processes of other commodities. And that means it's kind of its value is its kind of holding value.

When I look at kind of futures in the same kind of forecast that Benje kind of looks at, we do see a relatively high profile compared to history. Part of the reason for that is central banks, or at least some central banks have started to use gold. We haven't seen that behaviour in large part before. And they're holding gold because they've been essentially burnt by you know it's now really three different inflation shocks. So a Covid period where they were holding bonds and their value was eroded and inflation got higher. Kind of a second period where we saw tariffs kind of push up prices globally. And now it's kind of the third thing, is this oil price crisis.

So while central banks have tended to hold US Treasuries, as kind of their fund reserves, that portfolio has moved more towards holding gold. And that's kind of a – it's not just a kind of a new story for the latest kind of round of news. That's kind of a structural kind of shift in the behaviour of some participants in the market.

No doubt there'll be a supply response that would see kind of alleviate kind of some of that demand pressure. But certainly I don't see you know a clear case that the types of gold assumptions, in terms of the price, that have been put forward by the applicant, are unreasonable. Simply two reasons for that. One is the degree of volatility and that we simply don't have a good handle on what that price is likely to be. It's very volatile. And then two, kind of the points I've raised about looking at the futures market, looking at forecasts and then the point I've made about central bank behaviour.

Mr Muir: Ms Hampson.

Ms Hampson: Gold prices was not something that I had done any analysis of in my evidence. I did point out that it was important for some sensitivity assessment and I think the discourse of the various economists has assisted with that.

I agree with Dr Lees' view on this and I also just think we need to be careful when we are choosing an average to apply to the 14 operational years, that we remember that an average half the time it will be higher and half the time it will be lower.

So I did have some concerns about some of those very low prices that were raised during the joint witness conference. To think that, in fact, because it is an average that they're actually implying there are prices well below that again, and I found that difficult.

So I was of the view that the base case that I think was used in the pre-feasibility study was one useful scenario as a low. And I think the value that was assessed in the main economic assessment was a reasonable upper limit. And I'll leave it at that.

Mr Muir: Thank you. Dr Bertram.

Dr Bertram: [inaudible – coughing] gold is serving as a store of value in asset portfolios and what is going through at the moment is a portfolio adjustment process where, as mentioned, central banks have been picking up an increasing amount of gold recently because of changes in the attractiveness of particularly US Treasury Bonds.

But in the longer run, I defer to Dr Richard Meade's analysis, which I think is persuasive, that you're looking at volatility around the long run trend, and that long run underlying trend cannot be estimated with any certainty whatever. But if you've got to put a finger in the wound and say, "Where is this going in the longer run?" I think I find Dr Meade's approach persuasive.

Mr Muir: It would be fair to say that the consensus reached across the forecasters is likely to come from more specialist observation than generalist economists can ever give us? These are people who have possibly skin in the game.

Dr Bertram: I think people with skin in the game have to talk their book, and that can have quite an influence on the prices that they forecast, because they're speaking to clients, you know. So the incentives on direct market participants in terms of forecasting can actually be detached from what the longer run underlying economics [inaudible] driving the price, would be my comment on that.

Mr Muir: Thank you.

Dr Lees: If I could just pass a comment. I think the futures market and appreciate that you don't have the longer horizon contracts, but the people are taking wide bets in that market, and certainly central banks are not holding – moving towards gold because they think you know they will get burnt by the price of gold falling sharply.

Mr Muir: Yes. Dr Meade.

Dr Meade: Yeah I think just on that latter point, and I did mention this in my report, it's quite notable that when the Iran War started the gold price fell. Normally gold is considered the place you flee to when you want to fly to safety, right as a store of value. But the problem is the gold prices are so high at the moment that actually the risk is more on the downside than the upside. And so to see that the gold price has fallen with the Iran War is kind of like saying that the magic about gold as a store of value, it can be quite strongly questioned.

And this is because the current price spike, which peaked in January right, and since January we've only had lower prices. But this gold price spike we've had is very high, but of course the previous time we had a price spike nearly as high as this is about 45 years ago in January 1980. And we can say for certain that between January 1980 and now gold prices were a whole lot lower than they are now. That's a fact and they stayed at that much lower level for 45 years. That's a fact. And at no time in the history of the world have gold prices averaged US$3,138 per ounce over a 16 year period. That is a fact.

It is even less the case that gold prices have been sustained for 16 years in a row at $4,700 per ounce, which is Mr Patterson's upper case. That is a fact. These prices have never been sustained at those levels ever in the history of the world. And so we're being asked to believe, according to Mr Patterson's analysis, that they will be sustained at those levels. I find that utterly implausible.

We know that these gold price spikes happen from time to time and they resolve quite quickly, especially the more severe the spike, the quicker the resolution effectively, then we end up at much lower prices.

And to assist the Panel, I would note that the lower end of Mr Patterson's range, which is the US$2,220 price, is the upper end of my range. I can see that being okay at the upper end of my range. I can see that price being sustained for 16 years in a row at US$2,220 per ounce.

My base case, however, is somewhat lower. It's around about US$2,000 per ounce because, based on the pre-spike history, that is a plausible average level. And I can even see a lower price being supportable, so my low end is about $1,850, and that's because when I look at what 16 year moving averages are for the price, and we've been asked to think about what the average price is over a 16 year period, when I project that 16 year moving average price, we get up to about $1,850.

So, I see a lower range, but I do actually end up overlapping with Mr Patterson at the top end of my range, which is the bottom end of his range and I think that should, I imagine, assist the Panel.

But, you know, people get yeah kind of stars in their eyes when gold prices spike, and this is where you get a whole lot of gold miners rushing in and gold prices spike, which is why you get a supply response when gold prices spike, which is why you get a degree of mean reversion. And I accept Dr Lees' comments on this. There are studies that show mean reversion in gold prices. This happens. Historically this has been the case. And these are formally published academic studies, so it's not like this is just a, you know, we licked our finger and we tried to figure it out.

And regarding the role of future prices, we don't have any significant volumes beyond around about two years. So we don't have market prices beyond about two years. And in any case, according to the theory of finance, finance theory, we have relationship to try and figure out how futures prices should be related to future expected spot prices. And those you call arbitrage relationships. I mean we have literally text books on this. Like we have, you know, we have this text book. It's the financial analyst's bible which talks about the relationship between future prices and expected future spot prices. And it is only by chance they will be the same. So systematically they will differ. So futures prices don't tell us what future spot prices are going to be except only by chance. And more often than not the futures prices will be above the expected futures spot price.

But that said, as I said, we don't have any traded volumes out much further into the future.

Sir that's my comment on gold prices. Are we going to reserve other [over speaking]

Mr Muir: You're so firm in your views, Dr Meade, about – or your pessimistic scenario so firmly expressed, I take it that, you know, to the extent that it's possible, you are shorting gold to the extent you can.

Dr Meade: Sir, I have my own portfolio. It's invested in other things. So that's what I focus on. So look anyone could be saying that comment, right. So if we thought the gold price was going to be 4,700 for a variety of years, it's currently 4,300. So you should be buying gold and sticking into a vault and sitting on it for 16 years. Good luck with that.

If we look at – if you tried to look at the confidence intervals for forecasts of anything, those confidence intervals become very, very broad, very, very quickly the further out into the future you forecast. So if we're going to forecast the confidence interval on a highly volatile gold prices 16 years into the future, anything goes.

Mr Muir: Thank you. Dr Kaye-Blake, did you wish to address this issue?

Dr Kaye-Blake: I would please, yes. I don't have a comment on the gold price. I haven't studied it. I don't know much about it. I do have two methodological comments and one forecasting comment.

So, the volatility of the price means that we want to do an analysis with a lot of different values and a wide range of values. We haven't seen that. So just to inform the Panel, all of these different gold prices should be put into an analysis and cranked through to see what the impacts are. And, of course, it's up to your judgement whether to take the results from it. But just seeing what the results are from these different analyses, or these different gold prices, I think would be useful.

The second method comment is that the gold price is one source of uncertainty in the analysis, and we're going to take each on in turn. But I think we also need to remember that there is an element of compounding or stacking with these. So if we get the gold price wrong and we get the cost wrong, and we get the foreign exchange price wrong, and, and then you don't end up just 10 or 20 per cent around your average, you end up 50 per cent below your average, or above your average. Or, 80 per cent. So that impact of compounding these sensitivity analyses needs to be included. All we've seen to this point, my understanding, all we've seen to this point is taking each variable in turn, rather than all of them together.

And then just one sort of comment on forecasting. Back in the 1990s I was doing Black-Scholes equation forecasting of dotcom firms' share values and I can assure they looked very good in 1998. And in 2001 they looked less good. So, I've been chastened by that experience.

Mr Muir: I think it's probably the value of having a combined age of about 400 and something years on this Panel. Mr Patterson I round back to you. I'm sorry, Mr Miller, did you have any comment on this?

Mr Miller: Yeah, a couple of comments if I may. One is just first of all to support the position of Dr Meade about the historical implausibility of a long run sort of $4,700 gold price. That seems not supported by the historical evidence.

One comment a couple of times that I wanted to support was the idea of mean reversion. That seems to be part of the behaviour of gold prices. There has been a bit of discussion around central bank behaviour with regards to gold prices going up. I think there we should also consider the possibility that if central banks at any point over the coming period start to hike their rates then that could have the opposite effect, because interest backed securities would become more attractive to investors, and they would shift out of gold, which doesn't – shift into interest backed securities instead where interest rates are higher.

And then the other point that I wanted to make is that as well as establishing an average figure over the period, it is also important for us to think, for the purposes of trying to think about what the tax revenue might be at the very least, to think about what the direction of travel is going to be. And I think we can all kind of assume, seeing -- looking at the gold price coming off a peak, that we will start off with higher gold prices and end up with lower gold prices if there is some expectation of mean reversion and the average will express all of those, but there will be a direction of travel to consider as well.

Mr Muir: Coming back to you Mr Patterson.

Mr Patterson: Thank you. Look just with regards to the volatility of price, there were an MPV for the project in terms of its GDP effects was calculated for each of those price scenarios that I put forward. So the impacts range from $2.1 billion from a GDP effect perspective, right through to $5.0 billion at the higher end of the range.

Mr Muir: At 4,700?

Mr Patterson: At 4,700 yeah. I think it's going to be very difficult to reconcile the differences of opinion with gold prices, but noting that the lower end of my very expensive range is consistent with the upper end of Dr Meade's very narrow range. And I do find it hard to believe that we couldn't put any weight on what 12 major institutions had put forward in consensus forecasts, given that none of these institutions - - -

Mr Muir: Is at Dr Meade's level?

Mr Patterson: - - - is at Dr Meade's level. Now in terms of not having considered any other I guess being conservative in any of our other assumptions, I do want to draw the Panel's attention to in Santana's share market disclosures of its updated pre-feasibility study, that all of its costings included a 10 per cent cost over-run above and beyond. So that is already baked in to all of their analysis.

When it comes to the direction of travel for tax, at the, you know, the tax implications of lower gold prices weren't based on that lower gold price persisting across the duration of the project. So it didn't account for there being a period, I guess a process of a high price needing to reduce down to that lower level. They essentially assumed that that low price would persist the whole way through. So in a sense it's already quite a conservative assumption to be making, given that it seems quite likely that the only years of the project, even if we were to revert to those lower average prices, would be the – would staff off at a much higher level.

Mr Muir: Questions from the Panel, from Commissioner Barry?

Dr Meade: Sir, is it possible to make one final remark before we have the Panel questions?

Mr Muir: Yes.

Dr Meade: Thank you. So just regarding this consensus forecast point, these forecasts go out to 2035, so they cover seven years of the mine's operating life but not the latter seven years of the mine's expected operating life. Of course, the later this project starts the less the consensus forecast period would actually overlap with the mine's operating period.

So we don't have – we've only got 16 institutions' consensus forecast, and we know the consensus forecasts are notoriously not that reliable. But anyways, taking that as given [over speaking]

Mr Muir: [over speaking] forecasts are looking very reliable.

Dr Meade: Sorry, say that again.

Mr Muir: So the great difficulty with all of this forecasting, I mean I accept I made the somewhat facetious comment that not even Treasury's forecasts have looked particularly reliable for the last year or two.

Dr Meade: Indeed sir, which is why a degree of conservatism and sobriety about these things, not getting too excited about current price spikes, is pretty much the order of the day. Just taking what's called a Bayesian approach to these things.

And just in terms of responding to Mr Kaye-Blake's comment, I did, in my – in the joint witness statement I noted that my $90 million annual equivalent present value amount was based one the 22 – $2,220 US gold price and since then I've recalculated. If I adopt my base case US$2,000 gold price, and if I also allow for a different exchange rate to that which Mr Patterson assumed for the New Zealand dollar US exchange rate, my $90 million figure falls to about $67 million. And I'd stress that's an approximate figure. So that $67 million figure is based on the US$2,000 gold price, it's based on point 625 US dollars per NZ dollar exchange rate, versus Mr Patterson's point 58, just using long term historical averages for New Zealand exchange rates as a guide, and my 90 falls to 67 million, just as a point of reference.

Mr Muir: Yes. Very good. Commissioner Barry.

QUESTIONS FROM THE PANEL

Mr Barry: Thank you, and thank you to the experts for their helpful insights. I think there are – it's obviously a very difficult area, but also an important one. And I'm just sort of left wondering, surpriseable that that differences between the experts are in some ways not greater. You know, we have, correct me if I'm wrong, but the pre-feasibility study for Santana assumed a gold price I think around $2,203.

Mr Patterson: That was only one scenario, yes.

Mr Barry: That was I think the base case.

Mr Patterson: Yeah.

Mr Barry: And that's not far at all from Mr Meade's suggested range.

Dr Meade: Same as, yeah.

Mr Barry: Sorry?

Dr Meade: My upper case was exactly that number.

Mr Barry: Yes, and your base case was only $200 different, which is noise in this situation. So really are we that far apart and could we just take, as a base case, the – in a perhaps somewhat conservative, but it's not perhaps bad to adopt a conservative approach, of you know the Santana's pre-feasibility base case number of US$2,220 as a mid point for lack of anything better?

Mr Patterson: I would respond that, in my mind, given where current market pricing is, given what we've discussed about how potentially slower potential mean reversion could be this time around; given where consensus forecasts sit, I would still think of that as my lower case, and the case that I've put forward in my initial report, for me personally, I would consider is my central viewpoint. But I have provided those figures for that lower case, and wanting put weight on that. That's just my professional opinion.

Mr Barry: Thank you. And I am, of course, talking about an average over the life of the plant, and there's questions that would imply a downward trend over the time and course. So any comments from the other experts?

Dr Meade: Yes, if I may thanks. I mean I did allow for that scenario in my report where I looked at historical sort of timeframes for reverting back to a more normal, if you like, price level and I allowed for that scenario explicitly and get to broadly the same sort of levels that I've been talking about in my ranges.

Dr Lees: I mean there are questions about what you want to adopt as a scenario and whether there's conservatism baked in. But my view would be the gold price will be higher than the range you're considering over that period. I put some weight on the fact that central bank behaviour is changing. So that's not just a trade to hold gold to you know make a return. It's kind of a shift in what we've seen central banks kind of do, and I think that will have sort of legs and will weight fairly heavily on the sort of the mean reversion process. The world is more uncertain. We've seen you know structurally the world struggle with inflation from a range of different events and geopolitical outcomes. So I kind of think that gold, well I don't kind of think, I believe that gold will be stronger than sort of the base price that we're looking at.

It's a slightly different question though of whether you want to proceed with that as a baseline scenario.

Mr Barry: Thank you. Well that's helpful.

Mr Muir: Thank you.

Dr Meade: So if I could perhaps just respond to this point about the central bank behaviour. They say history doesn't repeat itself, but it rhymes. The peak price in 1980 was precisely because there was concern about the credibility of the Federal Reserve in the US containing inflation at a time of oil price shocks, and so forth. And so there was a flight to gold as a way to have a safer asset than US Treasury Bills and Bonds.

That's the same as now, right. But what we know is that we had a very, very rapid de-escalation in prices from the January 1980 peak precisely because when the problem gets so big people work out the answer, right. So if the problem is we get a lack of credibility and central banks fighting inflation, then policy makers respond by improving the credibility of the inflation fighting mechanism in institutions. So we get into the era of independent of central banks and so forth which contained inflation and we saw the gold price falling quite rapidly and maintaining much, much lower levels for 45 years as a consequence.

So I partially accept Dr Lees' analysis that we've got central banks fleeing to gold as a store of value because they're finding US Treasury Bills less palatable. But let's be honest, President Trump isn't going to be the President forever. America, if it ends up with entrenched inflation, will have to do something about fighting inflation, we could just end up repeating what we did in the 1980s, and we come back to independent central banks fighting hard to contain inflation, the credibility of US Treasury Bonds are restored, and the credibility of the US exchange rate is restored, and therefore we see the gold price tank. We've seen this before.

Dr Lees: That's a very rosy tinted, you know, that's - - -

Dr Meade: Needs must, I think. Needs must.

Dr Lees: What you're seeing is a world where erosion of independent central banking where the President of the US can choose, or hand-pick his man to go and be the Chair of the Federal Reserve. And so it's not just that kind of impact. If you look at the debt profile of the US, investment banks are looking at the long run picture and saying, "Look for anyone that wants to get elected, bringing in a hard line, let's get inflation back towards the target and a hard line kind of central banking approach" you're pushing against a very hard kind of world where, you know, if you want to reduce debt that's probably aligned

But what has transpired is you've got a - - -

Mr Muir: Accelerating debt profile [inaudible]

Dr Lees: Yeah, and the President chooses his person to be the head of the Federal Reserve. That's a very different world to a world where we're reforming how central banks are put together to target inflation.

Dr Meade: We are describing the world as it was before we put in independent central banks.

Dr Lees: Well we could think about – I mean there's a long argument you could have here, but whether you've actually started to see the start of kind of loss of control of, you know, the weight that central banks have relative to what they had in the past. And it takes work to kind of arrest that change, and whether you have the political will to do that. It's not clear that's as easy as it was in the past.

Dr Meade: Well I'm not sure it's clear that it's harder.

Dr Lees: The debt profile would suggest that it's harder than what it was in the past.

Dr Meade: Well the world price shocks were pretty severe on the economies right. Less severe now. Anyway I don't wasn't to get into too much [inaudible – over speaking]

Dr Lees: [over speaking] it's a larger shock, but anyway.

Mr Muir: Right. Cross-examination on this topic? No. Very good. Assessing Market and Non-Market Adverse Impacts.

Dr Bertram: No we had taxes under this heading.

Mr Muir: Sorry.

Dr Bertram: I mean we had taxes under this heading and I wonder if - - -

Ms Sweetman: Taxes and royalties.

Mr Muir: Oh yes, I'm sorry. Yes, I've missed the small print. Yes right. Taxes and royalties. Mr Patterson.

Taxes and Royalties:

Mr Patterson: Yes, sorry, I was just finding my notes - - -

Mr Muir: Yes.

Mr Patterson: - - - and changing gear into another topic. So total Government revenue estimated within my original report and my section 53 responses, drew on economic modelling of MGL's financial models included in it's updated pre-feasibility study and that was made to the stock markets. And there were concluded royalties and corporate taxes that would be paid to Government. I also estimated from their manning assumptions and pay assumptions, what the implications would be in terms of income tax that would be paid by their employees.

So these are affected by gold prices. And so I have estimated these under different gold price scenarios. Even under the low gold price scenario of $2,220, and discounting at an eight per cent discount rate, that would amount to $651 million of revenue to the Government in MPV terms.

All tax revenue it should be considered to be a benefit, including the tax that's paid by New Zealanders. This is because the tax is paid for an industry that would not have existed in the absence of the project. So all Government revenue, notwithstanding any opportunity costs with regards to labour, if we take in that sort of conservative approach, would be an additional to the status quo base line that would've occurred.

I note that within these calculations I haven't made any allowance for additional revenue to local Government through the potential for there to be higher rates. It also hadn't incorporated in other sources of local government revenue, such as if I was to specifically comment on the contractual arrangement for commercial access over council-owned [inaudible] land. That would be in addition to what I had estimated.

Now at this sort of level of revenue there's been a lot of comments put forward as to do gold mines ever actually pay decent amounts of tax? If we look at the OceanaGold annual report for last year, for 2025, it showed around about $170 million of corporate taxes paid, just over $30 million of royalties. So just over $200 million of tax paid to Government between those two sources. In addition, there's give or take 50 plus million dollars of income tax paid by employees, if you look at the compensation for employees that was in those financial statements. So the best part of $250 million more or less was paid in the previous financial year.

That's probably enough for opening comments.

Mr Muir: Dr Lees.

Dr Lees: I have very little to offer the Panel on the issue of royalties and taxes. I can offer insights from economic perspective. There's certainly some questions that were raised in expert conferencing by Mr Miller, and you're probably better to be advised through that expert rather than anything I particularly can add now.

Mr Muir: Thank you.

Dr Lees: If there's something specific in the material I have [inaudible]

Mr Muir: Thank you. Does the same apply to you Ms Hampson.

Ms Hampson: Yes. I think just the general point that obviously as we change some other assumptions in the modelling, then the changes flow through to tax and royalties. So there's a spectrum and they won't be even every year. I would point out that, and I think it was in my evidence, that OceanaGold whilst they might have paid quite a lot of tax in the last financial years, there's been other years where they've paid nothing. So I think - - -

Mr Muir: Yes, the Panel's aware of that.

Ms Hampson: Yes.

Mr Muir: Yes. Dr Bertram.

Dr Bertram: Yes I had two comments. Oh no basically one. If you look at the company's projections, and the one, as I understand it, that's what's been used by Mr Patterson, they're based on an assumption about the way in which a trans-national mining company pays tax. Which says, if you simply take the cash revenues, you subtract the operating costs and depreciation from that, which gives you a net profit before tax, and then you apply a 28 per cent tax rate, and that's your forecast of tax, and you credit that in the year in which that calculation applies, and that gives keeps the time [inaudible] for tax.

Now that, in my submission, completely misrepresents the way in which trans-national mining companies structure their affairs with respect to tax. And none of the devices that are currently used by all trans-national mining companies, of which I'm aware, have been accounted for in Mr Patterson's projections.

The characteristic things that are done, in the past a lot of related party lending which meant that they would have a tax deductible expense, management fees to parent companies, which is effectively a form of transfer pricing, tax deferrals, impairments and revaluations, [inaudible] into the tax calculation. And it is in fact a very highly specialised and complex area of tax accounting.

So the best way I think to appreciate how different the results are between what you get by that simple calculation of revenue, minus costs, minus depreciation and then applying the tax rate, is to actually look at the actual record of companies. And as has just mentioned, OceanaGold is a very good example where you can see the tax accounting working its way through from 2004 when Oceana moved into the business, down to 2025. There's 22 years there, and of those there are only five years in which positive cash tax was paid.

If you look at the last year, where Mr Patterson says there's $170 million of tax paid, that's the tax provision in the P and L account. The actual cash account is quite different. It shows $72 million -- $72.5 million. In other words the actual tax that the company pays bears very little relationship to the – this is a very simple calculation that's gone into Mr Patterson's projections.

And I think that this does mean that there's a really serious risk, first of tax payments insofar as they are made are deferred until well down the track. In other words, when you do the discounting exercise they're going to shrink a great deal. And equally, that they may never transpire at all if down the track the company is able to use, as tax deductible items, various potentially unforeseeable developments between now and then.

So I think Mr Miller will have more to say about this. But I do want to emphasise that – I mean I ran my eye down the Oceana annual accounts for those 22 years and did the numbers, and there was about $270 million I think of tax provisions appeared in the accounts. There's half or less than that appears in the cashflow statements as tax actually paid. And the difference between them is the various devices, and I think Mr Miller will be expanding on for you.

Mr Muir: You're not a tax expert yourself.

Dr Bertram: I'm not. No.

Mr Muir: And you readily acknowledge that if you took a very long term view, as you just have, in relation to Oceana, that there have been significant changes over that 15 to 20 year period in the tax, if I could broadly call it, the tax avoidance environment, particularly around transfer pricing.

Dr Bertram: Yes, and I take that point specifically with respect to OceanaGold. If you look at the accounts, what you see is that quite a large deduction was taken until 2020 on related party lending. At that point, as the law was changed, related party lending disappears from the P and L.

Mr Muir: Correct.

Dr Bertram: And it is substituted by management fees to the parent company, which rises extremely rapidly over the last five years to more than fill the gap that previously related party lending was carrying. So I'm not an expert on this sir, but I do recount the accounts with an eye to the cash flows because that's where the impact on the economy comes from.

Mr Muir: Mr Miller.

Mr Miller: Yes, thank you. Definitely agree with most of the points that Dr Bertram just made. I think it's clear that depreciation is a very important discussion in this context, because in the context of a gold price that will go from being lower, it is likely, with most of the capital investment, or capital expenditure being booked up front, or early in the project, that the company would be able to use larger deductions at the outset, within the first five or six years to reduce their taxable income, which it is possible that that tax would be paid at a later date. But it is also possible that that tax could not be paid, if taxable income falls towards zero. If taxable income falls to zero at some point then that could be deferred in the long run until taxable income returns. So there is a possibility there that you know some of those deductions never turn, or some of those deferrals never turn into tax revenue for the Crown.

There's, it's almost important to think about the mechanisms that Dr Bertram was talking about in terms of related party borrowing, and transfer pricing mechanisms that allow companies to reduce their taxable income in the jurisdiction in which economic activity takes place. There has been some change to the regulation over the last couple of decades. These mechanisms are still very regularly used by companies, whether it is related party financing. I was looking at accounts for a company a couple of days ago where I saw a 10.5 per cent interest rate from related party lending. So these mechanisms are still available. They are just slightly tightly – they are regulated a bit more, but they are not regulated as tightly as in places like Australia and the UK, where again they are still available. And the possibility of transfer mispricing perhaps through a Singapore commodities hub or something like that, still completely possible.

There's no evidence that these structures are being used at the moment, but there's no taxable revenue that would make them necessary to be using. I think the stuff on OceanaGold is the difference between the expense and the tax payments has been well covered already.

But one point that I wanted to make in response to what Benje Patterson was saying, was around the labour taxes being paid. One point that has been made, I think in Dr Meade's submissions, is that where little adult wage premium, given that most of the workers that are going to be employed here are coming from different locations and likely already in employment, he quantifies that wage premium at about 25 per cent, and probably we should be looking at the labour tax within the same kind of rubric. So the amount of tax that the workers are paying, we should only be looking at the premium on top of what they are already paying in their existing employment. Because of progressive income tax, that's probably a little bit higher than 25 per cent but a lot of that, the labour tax that's being considered there, is already being paid by those workers.

And then a couple of other final points to make is that the rehabilitation costs at the end of the mine life can be claimed as cash tax refunds under New Zealand law. So that's existing tax payments that the company has made that they would then be repaid as tax, sorry as cash, rather than just as tax assets.

Similar for environmental conditions that are imposed on the consent. They would be deductible from taxable income as well. It's unclear the extent to which they've been excluded in the calculations.

So the number that Mr Patterson put forward of $651 million, I think a lot of that would be, you know, the objective of the firm is to try and reduce that as much as possible. That's their objective towards their – oh sorry that's their obligation towards their shareholders, the fiduciary obligation, and they will try and use all the tricks in the book to do that. I would imagine there are quite a few tricks in the book that would enable them to reduce that substantially, so I would not put a huge amount of weight on that figure that's been proposed.

We haven't spoken about royalties, but very briefly there are two royalty rates. They're [inaudible] per cent of revenue, or 10 per cent of accounting profit. My reading was, from looking at the numbers, that once the gold price falls below $1,600 that we go from that higher 10 per cent win fall rate down to the floor rate. And just conceptually it's important to consider that a revenue is a payment to the Crown for access to the commodity itself. It's not necessarily a tax.

Mr Muir: Thank you. Dr Meade, did you consider it necessary to add to this, or that has been adequately covered by Mr Miller.

Dr Meade: Only just one substantive point to make. I'm agreeing with Dr Miller, sorry Dr Bertram and Mr Miller on these issues of taxes perhaps not being paid at all. I would add this is where the limited liability structure clearly comes in. Because if the company decides to liquidate, any sort of deferred tax liabilities simply become unrecoverable. So there's a real risk that if circumstances were to change such that the parent company decide this is not a viable operation anymore, they could effectively choose whether or not to pay their taxes.

But the other substantive point I wanted to raise was just in reply to Mr Patterson's point about taxes being benefits. This is not how cost benefit analysis treats taxes or royalties. They're simply transfers. They're not value creation. They're value transfers, and a simple example of how this works is the fiscal drag concept. If we have an inflationary environment where people's wages are creeping up just because they're getting inflation adjustments to their wages, they're not actually better of in real terms, but they end up paying more tax. That's good for the Government. That's bad for the taxpayers.

So, taxes and royalties should only be counted as benefits to the extent that taxes and royalties paid to New Zealand from people who are not New Zealanders. And so I disagree that we should count all of the taxes paid, or royalties paid as benefits. And in my $67 million figure I referred to before, I had allowed for netting out those sorts of transfers simply between one group of New Zealanders to another group of New Zealanders. Thank you.

Mr Muir: I understand the point. Dr Kaye-Blake.

Dr Kaye-Blake: I have nothing new to add. I just want to put my thumb on the scale for the comments of Dr Bertram and Dr Meade and Mr Miller. They are correct about the structures issue, and they're correct about the taxes and the PAYE issues. That we're interested in the margin, not the total.

Mr Muir: Yes. I round back to Mr Patterson.

Mr Patterson: Thank you. There's quite a lot to address there. So, I'll do my best. I do need to note here that although I have a healthy working knowledge of tax issues insofar as they relate to economics, I'm not a tax accountant with specific knowledge about some of the nuances of tricks of the trade.

Mr Muir: Yes.

Mr Patterson: So in my modelling I've relied heavily on MGL's own projections that they have put forward in their share market disclosures to investors. So that is, you know, the fundamental I guess foundation of at least the royalty and corporate tax [inaudible].

I have made my own estimates of the income tax payable by employees. I take the point of others that when they're saying that that income tax is paid on the labour market income, personal tax, that if you were to assume that these jobs weren't net additional to what would've otherwise occurred, you would have to net off that personal income tax. But I have contended that I believe that through migration we would fill any vacancies that ultimately appeared within the Inland Otago area. So insofar as we fill those vacancies from people moving from one role into the gold mine, we fill that vacancy. You still would be able to consider more or less that to be the net effect.

Now with regards to – I do want to just draw you attention to the OceanaGold annual report. I'm sure that you've seen it and potentially had a look through. It is worth noting that these high interest payments on related party loans, that is not what OceanaGold does at present. It says in there that there's a zero per cent interest rate on those. In terms of the management fees paid to the parent company, last year those were about $38 million, which is approximately three per cent of annual revenue.

So I guess I'm just raising those points there to caution that while those obviously are potential options, you know, for a company such as this to reduce their tax burden, putting aside whether or not you can from an accounting perspective, they don't seem to be exhibiting that at present.

And so just one other thing with those – whether or not we include the tax as a benefit. You know, in my mind if you've - - -

Mr Muir: Which tax are you talking about?

Mr Patterson: In general terms, there was talk that it's simply as transfer payment. If we are selling billions and billions of dollars worth of gold, we're exporting it, and this is a new revenue stream that we haven't, as of today, had as a country on top of what we've got, then that's – then the tax that comes from that is certainly a windfall for the Government, putting aside how we calculate that. Any tax that comes is a windfall for the Government that is above and beyond what they would've anticipated. And having been to budget lock-ups for the past 15 years in a row, that's most certainly how it would be described in that environment, in those sort of documents by the Government.

Dr Meade: Perhaps I could offer a quick comment on that please?

Mr Muir: Yes.

Dr Meade: Thank you. The use of the word "windfall" I think is the perfect way to describe it. There's no value creation here. It's simply extra money goes to the Government. And to be clear, I have counted, as a benefit to New Zealand, any taxes and royalties paid by non-New Zealanders to New Zealand. So I'm not suggesting that none of these things should be counted at all. What I'm pointing out is from a New Zealand benefits test, per section 3 of the legislation, under a cost benefit framework we shouldn't be counting transfers from one group of New Zealanders to others of something that is not, per se, value creation, as somehow a benefit to the nation. It's just a clear transfer.

Mr Muir: Yes. Commissioner Barry.

QUESTIONS FROM THE PANEL:

Mr Barry: Thank you. Yes, the main question I'd have is for Mr Patterson. Given the various points that have been made by the other experts about the differences between the effect of tax rates that national companies pay and the 28 per cent rate I think you've assumed, would it be reasonable to assume in the base case, a lower effective tax rate?

Mr Patterson: So I haven't assumed a 28 per cent tax rate. I've simply taken the tax that has been assumed by MGL within it's financial projections. In terms of whether or not that's appropriate, take into consideration potential ways of minimising the tax payment, that's not within the realms of my expertise to advise further.

Mr Barry: Do you know what the effective, are you able to advise what the effective tax rate is implicit in the MGL forecasts?

Mr Patterson: I would need to cross-check against their financial model, or potentially if it could be answered by the applicant.

Ms Hampson: It's 28 per cent.

Dr Bertram: It's 28 per cent yeah.

Ms Hampson: You can reverse engineer it. It is 28 per cent.

Mr Barry: Thank you. I thought I'd seen that figure somewhere. Thank you. And we'll turn the question around though to the experts on the other side, if I can use that term, would you have any advice on what an effective tax rate one should assume is? I mean I think we can probably agree that – no let me leave it at that.

Mr Muir: Yes, can we start with you Dr Lees?

Dr Lees: I have no advice.

Mr Muir: Ms Hampson?

Ms Hampson: I don't have any advice on substituting 28 per cent for a different percentage. I think if I were in your shoes I'd be just accepting that the tax that's been calculated and recorded by Mr Patterson, is probably an upper limit associated with that particular gold price, and that it could be substantially lower. And I know that other fast-track decisions have accepted a range anywhere between zero and the number that was given to them. So I think that's, as vague as that sounds, a relatively safe position.

Mr Muir: You can't argue with that.

Dr Bertram: I think the problem here is, in one sense more acute than with the gold price. Because the range of possible tax, as the absolute upper limit, you could take Mr Patterson's, and the bottom is zero. And in fact the bottom is less than zero, potentially, because mining is distinctively an industry that generates tax losses through a variety of means. And one of the ways to check that is to look at Santana Gold's annual reports from 2013, the date when the company was established to take over some mining – some prospecting operations in Mexico. And from that time to at least I think 2025 there's no record of any positive tax being paid in any year by Santana. But they did collect a hundred million, or more than a hundred million I think from the Mexican Tax Authorities as tax rebates in their initial year of operation.

Mr Muir: But we don't tend to run that sort of model here in New Zealand.

Dr Bertram: We're hoping that we have a different tax system from Mexico. But the point is that the bottom end of the range unfortunately is zero. There's no getting around that. That there are strong incentives to defer, and as Dr Meade has pointed out, the option to walk away without penalty is lurking. This is a very high risk low probability scenario, I will grant you, but it sits there in the tail of possibles. And so one can't ever ignore it.

Mr Barry: Thank you. One other separate question on the treatment of ACC. It was pointed out by one of the experts in the written evidence that ACC perhaps is slightly different from the other taxes, in that [inaudible] Dr Meade mentioned, you know, we can think of taxes as primarily a transfer between New Zealanders. But in the case of ACC it is – could also, could on the other hand, be regarded as a payment for services, and so a cost in real resource terms.

Mr Patterson: While I realise that question primarily relates to a point that Dr Kaye-Blake identified I do want to just acknowledge that I was brief in my initial comments, that I haven't specifically talked about ACC which is about one per cent of my total estimate, that sort of order of magnitude, that that essentially it's a transfer to, that ensures against the risk of an injury. And so the two do net out. So I am accepting of the fact that ACC payments which were around [inaudible] in my calculations essentially, should be discounted by the Panel.

Mr Muir: Any other questions arising out of that sub-topic, Commissioner Barry?

Mr Barry: No thank you.

Mr Muir: No, thank you. We'll run cross-examination on the sub-topic before we look at cost of mitigation measures. Any cross-examination?

CROSS EXAMINATION BY MS GEPP:

Ms Gepp: Yes sir. The first question is, having said Mr Patterson that you're not a tax expert, would you defer to Mr Miller on the tax specific issues that he has raised?

Mr Patterson: It's not so much that I would defer to him, but I would anticipate that he has more expertise than me in these matters. I just think that it's important to have, you know, a balanced perspective in that space.

Ms Gepp: All right, thank you. And I want to come back to this issue of the, of OceanaGold's tax for 2025, because I think we did say just before that OceanaGold had paid tax of $169 million. But you'd expect, looking at that annual – you'd accept, looking at the annual report, that that was the taxable that they expense, but the amount they actually paid is a hundred million less than that, 72.5?

Mr Patterson: Yes. I was sloppy with my wording there. Their income tax expense that they booked was around 170. They paid about 70, but the previous year they had – they'd booked tax of about 70. So, you know, generally you pay your tax for the year that has just been. So, I'm understanding, in the course of the future, that it will ebb and flow, but you would expect that eventually that tax, you know, is paid.

Ms Gepp: So are you saying it's just that it's the tax for last year that has been paid, so we can expect to see 170 million paid in 2026? Is that your position?

Mr Patterson: I'm not sure what their 2026 tax position will end up with. But that's my – that is my understanding from reading it, that we more or less expect that quantum to be paid this financial year.

Ms Gepp: All right. So is it possible to ask Mr Miller whether he agrees with that? Because that's new information that didn't come out previously when Mr Patterson was addressing this?

Mr Muir: Yes, I'll permit that.

Ms Gepp: Mr Miller, I'm not sure if you heard that, but Mr Patterson has said that we could expect to see that fully expensed tax bill paid in 2026. Is that your understanding?

Mr Miller: From my – I don't have the financial statements in front of me, but my understanding is that there is a current tax liability of 170 million. So by current means the expectation would be that it would be paid in the next financial year. So yes I think that's probably right. One of the things to consider is that tax delayed is tax discounted. So yes 170 million would be discounted somewhat because the [inaudible] for one year and the opportunity cost that arises from that. But, can't speak for what will actually happen.

Ms Gepp: Thank you. Mr Patterson this kind of crosses over into the next topic, but it's in relation to the tax. Looking at the pre-feasibility study information, the cost of post-closure obligations was netted against salvage. That's right, isn't it? There was a zero figure for cost of post-closure obligations.

Mr Patterson: In terms of the specifics and deductibility of post-closure obligations, look I don't have any specific expertise in whether or not those are deductible. And as I said earlier, I took the MGL projections of what its tax would be based on the assumptions that they had made within that model.

Ms Gepp: Yes, so if their assumption is that the cost of post-closure obligations are zero because they're netted against salvage value, then their assumptions would not be – and if that's not correct, if the cost of post-closure obligations are a lot higher than salvage costs, then their own assumptions are not going to be correct on the income position are they?

Mr Patterson: Look that was an estimate at that point of time, and that estimate would change as more information comes to light in the nature of what closure costs will actually be, come to light, so that could evolve. I think the point to emphasise, and this is related to, you know, effects that are in future, when we're applying an eight per cent discount rate 16 years in the future, that becomes very small in net present value terms. And these tax figures in my section 53 responses had been discounted. So anything we're talking about in terms of 16 years in the future with closure costs, if there are small differences in MGL's assumptions, they would be very small in discounted terms.

Ms Gepp: If there are large differences though then it's going to be quite a different picture isn't it?

Mr Patterson: I would disagree, because at an eight per cent discount rate over 16 years that you know it really heavily discounts what that future value would be. So you could have relatively large swings in nominal terms, but in present value terms they would look much smaller.

Ms Gepp: Okay. Have you considered the Trust concept, and the fund to be established in relation to the Trust?

Mr Patterson: Not specifically up until a couple of days ago when I was provided with the RFI responses. I understand that that is a process that is still being worked through and I don't have more detailed thoughts on the matter than what are in that RFI response. I simply don't have the information on hand.

Ms Gepp: Okay. So you don't have any thoughts on the tax implications of that?

Mr Patterson: I haven't put my mind to them, and I think, at this stage, from what I've seen in that, we can't yet speak to those.

Ms Gepp: Right. Thank you. Thank you sir.

Mr Muir: Yes. Any other cross-examination?

Ms Vella: Sir just wondered are we coming back to general sensitivity analysis as a sub-topic?

Mr Muir: Back to?

Ms Vella: General sensitivity analysis as a sub-topic, and it's part of the topic, but – coming back to that now?

Mr Muir: I think we'll do it now.

CROSS EXAMINATION BY MS VELLA:

Ms Vella: Okay. In that case I just have one quick questions. Mr Patterson you have relied, to some extent, on Oceana's – OceanaGold's behaviour in terms of its tax payments to justify your position, is that right?

Mr Patterson: No. It's to provide context of what another gold miner, in the New Zealand context, is doing and is – it hasn't informed any of my calculations.

Ms Vella: Okay. But in terms of that context, you'd accept that if the Panel was to consider the behaviour of mining companies, it would be better considering the historical behaviour of this particular company, as opposed to another unrelated company?

Mr Patterson: I think that it's useful to understand what another gold miner does in the New Zealand context under New Zealand tax legislation.

Mr Muir: But surely, Ms Vella, we have to focus in that context on the taxpayer MGL which has no previous tax paying history? Hasn't conducted itself as a miner. Are you not conflating your New Zealand tax paying entity here with its ownership structure?

Ms Vella: Yes, that's true sir.

Mr Muir: I mean it may be relevant in terms of transfer payments and all these other things we've discussed this morning.

Ms Vella: Yes.

Mr Muir: Why would we – I mean there's no utility in interrogating MGL's previous tax performance as a gold miner, is there?

Ms Vella: Other than to the extent that it's owned by the parent company, Santana, sir, no.

Dr Bertram: Sir could I take this opportunity to correct a statement I made earlier - - -

Mr Muir: Yes.

Dr Bertram: - - - for the record? I mentioned Santana's receipt of tax rebates from the Mexican Government in 2013, and I erroneously inflated that number. Sorry, I was going too quickly. The actual number is around about 1.8 million, not a hundred million as I casually said in passing, and 1.1 million in 2013, 576,000 in 2015, and 283,000 in 2016.

Mr Muir: Well for reasons completely unknown to us, the mining industry does not seem to have the attraction of the film industry in New Zealand.

Dr Bertram: Sorry just please note it's not as dramatic as it might've seemed when I first raised that.

Mr Muir: Right, and thank you for your professionalism in correcting that. Thank you. Right. I'd like to try and round out this topic before we break for lunch. So we need to talk about – we have touched on it. Sorry there's no other cross-examination was there? Can I just touch base there.

Ms Vella: No thank you sir.

Mr Muir: And I'm sorry, Commissioner Barry, was there any issue arising out of the cross-examination?

Mr Barry: No, thank you.

Mr Muir: Right. Then I want to just close out then this particular topic by referencing the costs of mitigation measures and sensitivities there. We've touched on that really already Ms Vella in your cross-examination. Anything further you wish to add to this, Mr Patterson?

Mitigation Measures and Sensitivities:

Mr Patterson: Not specifically.

Mr Muir: Right. Well we'll do it the other way around then. We'll just look at the section 53 invitees, section 51 responders, and see whether there's issues that we need you to answer at the end of it. So just anyone, just without my necessarily going through everyone, Dr Meade did you want to address this issue?

Dr Meade: Which mitigation measures are we thinking of specifically, sir? Are we thinking of the bonding mechanism and that sort of mitigation measure, or others in general?

Mr Muir: Well it was defined in quite general terms. Commissioner Barry?

Mr Barry: Yeah, thanks Mr Chairman. It's probably, if it's okay, for best me to raise a question around this issue because it was my suggestion to add it to the agenda.

Mr Muir: Right.

Mr Barry: And just to give some clarity to the experts of what my question is about. It was simply to, in principle it seems to me that mitigation measures, compliance costs, should be deducted as a cost from the benefits of the project, like other costs are deducted. And in really high level it would be a transfer from a non-monetary benefit to a a monetary cost. So we're hoping that there is some non-monetary benefits to these mitigation measures.

But I just wanted to check with the applicant really as to the extent to which these mitigation costs have been allowed for in the MPV estimates? And they're not trivial. I mean, for example, earlier in the joint hearings on the ecological side, we heard that the costs of transferring some 102,000 lizards, as is proposed, you know, could cost the order of tens of millions of dollars.

So I just wanted to check that that number is factored into the economic analysis somewhere?

Mr Patterson: To answer your question, these mitigations were costed in, insofar as that was information available when the updated pre-feasibility study was produced. So anything that has happened in the period of time since, that is going to put a material cost on the applicant, hasn't been yet factored in to that.

Mr Barry: That's what I'd expect. Thank you. That's good to have confirmed. So can you give us some examples of what has been factored in? For example, the lizard transfer, collection and transfer costs?

Mr Patterson: I can't give specific examples without more rigorous read through again of the financial model. It would be, you know, everything that was in the financial modelling up until that point in time, which I believe was July '20 or June 2025. July 2025 that it was released.

Mr Muir: Well translocation of lizards has been – it's not something proposed latterly. It's been on the table since inception, as part of the applicant's suite of mitigation measures. Do you need, to answer that question properly Mr Patterson, do you need to go back to some source material?

Mr Patterson: I would need to yeah and confer with the applicant if I couldn't see that detail in the source material I had. I'd have to double check.

Mr Muir: Right is that something that could possibly be done while we take the lunch break, or does it need more work than that?

Mr Patterson: I can ask the question.

Mr Muir: Ask the question, right, thank you.

Ms Gepp: Sir, could I just ask whether it would be possible to have the post-closure water treatment costs question asked as part of that as well? The duration of post-closure water treatment, secondary and tertiary treatment systems, all of the information that has come out about water treatment?

Mr Muir: Yes. Right. Can we just park that issue and we'll come back to it after the lunch adjournment, to the extent that we can. Is this, having been introduced in the way that Commissioner Barry has, is this a topic that any other of the experts wish to comment on? You know what the issue is.

Dr Meade: If I may do, briefly, sir.

Mr Muir: Yes.

Dr Meade: Thank you. So I'd only just make the remark it would be important to make sure that when we deal with any mitigation costs, that we do treat them actually as costs. I'd be concerned if economic impact analysis were to say, "Look we're spending more money on doing things like transferring lizards, or treating water post-closure, therefore that's a benefit, because it stimulates economic activity and so forth". This is like saying that when we rebuilt Christchurch after the quakes this was a win for the country. Clearly the country itself had a massive loss.

Mr Muir: Yes, I don't think anyone on the Panel is going to be seduced in that way.

Dr Meade: Thank you sir.

Ms Sweetman: I think your point though, isn't it Dr Meade, that these need to be addressed transparently, as to what side of the ledger they're going on?

Dr Meade: Absolutely, indeed, Ma'am.

Mr Muir: And the correct place for them is in an assessment of impacts and the extent to which they are mitigated. So that ultimately if these are successful, or we accept that they will be successful, then the extent of the impact is commensurately reduced by the mitigation measure, and that's where the balance, where it is reflected in the circumstances?

Dr Meade: Indeed sir. Yeah so we thinking about avoided costs if you like. So we have a cost of something happening. We spend some money to avoid that cost, and then the question is how much net do we have left over, if anything? Is it positive or negative? That's the thing we should be focusing on.

Mr Muir: Right, thank you. Very good. Sorry, can I just check off, any cross-examination on that topic. Yes Ms Vella, oh Ms –

Ms Gepp: Can we wait until we've got the - - -

Mr Muir: Yes. Yes, let's come back to it straight after lunch and see whether Mr Patterson can help us further. Ms Vella, did you have some other point?

CROSS EXAMINATION BY MS VELLA:

Ms Vella: Yes sir. Sorry, it wasn't exactly on this point, but I queried whether we'd coming back to sensitivity analysis generally, which was not necessarily in relation to the mitigation, cost mitigation.

Mr Muir: Everything's on the table.

Ms Vella: Okay.

Mr Muir: We've been talking about gold, we've been talking about tax.

Ms Vella: We have. And I just wanted to pick up on a point that actually Dr Kaye-Blake mentioned in his initial sort of comments but hasn't been explored. So I wondered if I could just ask, or confirm with Mr Patterson. Mr Patterson you've done somewhat of a sensitivity analysis around individual components of the analysis, is that correct?

Mr Patterson: On some components, yes.

Ms Vella: On some of the components, yes. If that's been done on an individual basis, and hasn't been reflected in your analysis in a compounded way, in others words if more of one of those sensitivities were to move in one particular direction or another, that's not reflected in the analysis before the Panel at the moment?

Mr Patterson: Well so with the gold price overlayed with cost assumptions, there is – the two are overlayed, because there is an additional 10 per cent cost contingency that was included in MGL's projections. When it comes to things like exchange rates, the two haven't been overlayed together. But I'd note, again the lower bound of the gold price, where that's sitting, that was more than 60 per cent below where the most recent pricing has been this year. And in the joint witness statement I believe, I actually had written a note here, bear with me for a second, Ms Hampson and Dr Lees they'd agreed that the 58 cent assumption was potentially appropriate. And if we look at Dr Meade's exchange rate estimates they were about 12 per cent different.

So I guess what I'm trying to say is that in the context of an over 60 per cent decline in gold prices, it's a relatively small additional overlay. So I assume that, you'd be assuming that both of them moved in exactly the same direction at the same time.

Ms Vella: Thank you sir.

Dr Kaye-Blake: Could I make a comment on this? This was something that I brought up in my economic evidence because I have a table in here, page 20, paragraph 79, where I do exactly that. I say, "Well what happens if, you know, if we really get it wrong, if the numbers move against us again and again and this shows that on a central analysis, it's a $2.8 billion profit. But if things go badly we can end up with just a half a billion dollars worth of profit". And the point there is just to say it's not each one thing by itself. Also we need to be thinking about what happens if all of them move in the wrong way because the compounding effect actually can remove a lot of the profit. And then actually we end up with some of the situations that we've been talking about elsewhere, where the company walks away.

Mr Muir: Yes. Well I know that probably within the context of your evidence, this sort of, this slightly pessimistic scenario is one that I can understand you are bringing to our attention. But isn't it the case that just with every other of the variables here, there is at least there is some probability of them moving in the other direction again, and the compounding effect produces a commensurately larger profit. And it's for us to make that assessment ultimately, isn't it, given the advice that we have.

Dr Kaye-Blake: Could I suggest that - - -

Mr Muir: That if we took the worst case scenarios, if that's the way in which we were obliged to make our decision-making, constantly on a worst case scenario basis, then what you say would be dispositional in terms of where our outcome on assessing regional and national benefits lay, but that is not the mandate either of the Statute or of the case law. We must try and make a, within a range, a best assessment?

Dr Kaye-Blake: And my suggestion would be that as economists we have some tools - - -

Mr Muir: Yes.

Dr Kaye-Blake: - - - that would provide you with more information, because you could develop a risk matrix, or a probability matrix that took these different variables and told you the likelihood of ending up at the worst case, or the best case, or the middle, and then average across them. And that would provide more detailed information that allows you to then use your judgement about the project. But we have those tools and they haven't been applied.

Mr Muir: I'm going to take the lunch adjournment now, But could I just check in with Ms Gepp first. I'm very conscious of the fact that we've had Professor Higham sort of on hold. He's not time sensitive?

Ms Gepp: He's gone away and he's coming back. So he said 2.30 would be great. He had to go to a meeting, but if he could pick up again at that sort of time, which may work very well.

Mr Muir: Around 2.30. Very good. Okay.

Ms Gepp: Thank you.

Mr Muir: Panel, please remind me, that whatever else we're doing we owe it to Professor Higham to check in with him at 2.30. Okay, thank you. We'll adjourn until 2 o'clock.

Lunch adjournment

Mr Muir: Right, thank you. Mr Patterson are you able to further assist us with the issues that we raised before lunch?

Mr Patterson: So yeah I discussed with the applicant over lunch. Look in terms of you know costings, the mitigations of impacts, yeah I note the post-closure we do have some steer on the anticipated level, but we don't yet have the clear details. So, the proposed Matakanui Trust framework, at this stage, has $50 million in a ring-fenced fund. That is anticipated that that would be more than sufficient to accommodate any post-closure expenses. And note that $50 million is not on a discounted basis. So if we were to discount that today, you know, that's in the order of magnitude of about 20 million or so of effects that are in totalised post-closure.

The actual closure expenses themselves, the best estimate of those was in the updated pre-feasibility study which had made the assumption that the salvage value of plant and equipment would be sufficient to cover those closure expenses. So that's the most current view we've got on it.

Now in terms of ecological mitigations, during the mining phase, you know, lizards and native plantings and you know predator fencing, you know those I guess that have been agreed upon, that's still a work in progress. But, given the scale of anticipated revenue and profits from the operational mine, we need to put them in perspective. We're talking about, you know, moving some lizards, planting some plants, putting in fencing that kind of stuff, against, you know, potential MPVs of the project in the order of billions of dollars. Those are quite small costs that would be internalised by the project.

Mr Muir: The endowment of the Trust is a cost in the sense, isn't it? And you have said that on an MPV basis that's around $20 million. This is something that's occurred latterly of course and not in your original advice. So, cumulatively over the life of the project, do we take $20 million out of the overall national and regional benefits?

Mr Patterson: Well it's insofar as those internalise, they internalise the impact.

Mr Muir: Yes.

Mr Patterson: So on the basis of the RFI response, which you have in front of you, the expectation is those will more than internalise those effects. So while there's more work to be done, if it is indeed the case that that is more funding than is necessary to internalise those – sorry get my tongue right – to internalise those impacts, then there would be a residual benefit from that fund above and beyond that could be applied to other uses.

Mr Muir: We could only answer that inquiry if we knew exactly what costs that have already been taken to, can I call it, the net outcome of the project were now being captured in this internalised amount. What we sort of asked you to do at lunchtime is to try and capture to what extent, putting aside the endowment fund, to what extent they had been properly captured.

Mr Patterson: Okay. So yeah that's – so then the idea that the salvage value would cover the closure costs was already captured.

Mr Muir: Yes, there's scepticism about that.

Mr Patterson: And the – this fund that wasn't obviously on the table at that stage. So it wasn't captured. Anything within the package of ecological mitigations that hadn't yet been proposed, that they're not yet – they weren't factored into the analysis. But I was simply trying to offer some perspective on the nature of what those are against billions and billions of dollars of gold revenue [over speaking]

Mr Muir: Well I think we appreciate that. But I raised the question before lunch that the subject of translocation of lizards has always been on the table, and during the course of evidence, to the surprise I think of the Panel, one of the applicant's expert conceded that, you know, there would be "tens of millions of dollars" engaged in that. Cited a response from me at the time about that since one can't work out how many lizards are likely to be saved as a result, you can't even count them because you're not allowed to toe clip them, so it seemed like a very expensive, I think I described it as a balm at the time.

But in any event it's been on the table from day one and presumably therefore is part of the costings that you analysed in terms of the overall net benefit.

Mr Patterson: I can only speak to anything that was costed up until the pre-feasibility study when that was released, if it had been costed up, it's included. But anything since then, or if it had not been costed up, it is not included in the analysis. I can't speak with authority.

Mr Muir: So how do we get to the bottom of that? Do we have to issue another request for information about it?

Mr Patterson: Well that would be one way. But given that those plans are evolving, in terms of you know how you precisely implement them, it may be that there's still you know significant uncertainty as to what the cost would be. It's interesting that that expert had put forward a figure of tens of millions. Hypothetically if that were the case, that's a very small number, very expensive lizard, but against the project that's very – it's a very small cost to internalise the impact against the overall scale of the project.

Mr Muir: And just in terms of the endowment of the Trust, you didn't give any thought to just what the tax implications of that are? I don't know that anyone knows what the tax implications of that are. Whether that is a – the endowment becomes tax deductible or as a what a charitable [inaudible] or whether it's directly expensed as a cost of the mitigation.

Mr Patterson: I'm sorry I don't have any further details beyond the memo on that.

Mr Muir: Thank you. Any issue emerging out of that? Ms Gepp?

Ms Gepp: Do you want to check other witnesses?

Mr Muir: Apologies.

Ms Gepp: That's all right. Were you asking counsel or other witnesses sir?

Mr Muir: Yes. Perhaps we can do it that way. Did any of the other experts wish to comment on that?

Dr Kaye-Blake: I would like to pick up on the comment about an expensive lizard because this goes to the point of doing non-market valuation, and also analysing different scenarios. Because, now the applicant has been able to put in front of you, if we spent this, it's a very expensive lizard. But other bits of information could also be put in front of you that have dollar values attached to them. So one of them would be, how much do people value this lizard? It may be an expensive lizard, but actually it may be that New Zealanders are willing to pay that much for it, and we simply don't know that other side of the transaction with a valuation.

The other thing that hasn't been done is something like are there other ways we could get the gold out that might be more expensive but would protect the ecosystem and the landform and the lizards? And that then becomes a way, if you can compare an open pit mine with say underground minding, then that provides a way to say, "We could supply you these ecosystem values, we could supply you the landform that you've gotten used to, and you'd like to have, but it would cost and extra billion dollars, two billion dollars" whatever the number is.

And so we're missing these pieces of information that could be done to create a full economic picture of, what would it cost to supply or protect these ecosystem values, and how much were they valued by New Zealanders?

Mr Muir: Thank you.

Dr Meade: Sir, if I could perhaps add a very brief comment.

Mr Muir: Yes.

Dr Meade: Thank you. So really it's commenting on this question of the level of post-closure costs and off-setting them against the scrap value of the plants and equipment. As somebody who has built quite a few valuation models in my time, that struck me as a very convenient modelling assumption, but not a very serious modelling assumption. Effectively we have no serious estimate of what the post-closure costs are on the table from either Mr Patterson or the applicant. They've just simply got a very, very convenient modelling assumption that means they don't have to think about it. They're kicking it into touch.

Mr Muir: Yes, but I think we have to take into account the fact there that was is proposed by the applicant is not that all of the remediation work is going to occur post-closure. Indeed, it's going to initiate, for example, in the off-sets in the Ardgour property from a early part of the mine's operation.

Dr Meade: Indeed, which brings the present value of those costs forward, which raises their negative impact on the overall project net benefits.

Mr Muir: Yes. I understand that. Right. Any other comment?

Ms Hampson: I was just going to – I perhaps have a comment on where you might put the value of this expenditure on mitigation in terms of what side of the ledger it sits on. Is that useful?

Mr Muir: Yes.

Ms Hampson: To me I said earlier that economic impacts aren't wholly benefits, and that's because there are components of those impacts that are not delivering wellbeing outcomes. And part of that is what I would call defensive expenditure. So there's some expenditure is there to mitigate the effects of your exponalities.

So if they're spending money on trying to off-set ecological impacts, whether they're spending money on closure of the mine, that's really to mitigate the effects of their business operation.

And under the Act you're required to assess impacts after the application of conditions which mitigate those effects. So only the residual impacts are left. So you have already deducted the benefit of that expenditure, because it achieved that reduction.

So I was just going to make the point that you don't also need to subtract it from the benefit side of the equation because you'll end up double counting. I think the true approach is not to include it at all. And so if they haven't, if MGL has not factored in some of the expenditure items that are arising through this hearing process, or through the application, that may be okay. Because of their defensive expenditures they don't need to be counted from a benefits point of view and you've probably already accounted for what they mean in terms of residual impacts.

So I would just – I would exclude them. It's kind of like if a residential subdivision was going to create a need to upgrade an intersection to manage traffic effects, then I personally wouldn't include the cost of the intersection upgrade as a benefit. I would not even put it through my economic impact model. So I would just exclude those costs from the ledger.

Mr Barry: I think I follow what you're saying. There are two ways of doing it, in principle. We could reduce the net monetary benefits and reduce the non-monetary costs, or we could just not do anything. The same net effect, because it's very difficult to quantify how much a net monetary – the net non-monetary costs have to climb by. And so you know your approach does make some good practical sense, I think.

Ms Hampson: And it doesn't mean that there aren't wider benefits, or wider costs to come from the process of that expenditure. So, if upgrading an intersection means benefits for the wider community, or improvements in road safety for other users, then that's a benefit you can count. But the actual cost element of it, the expenditure of it, doesn't need to flow through an economic model to generate GDP et cetera.

Mr Muir: Right. Just before we get on to the next topic, could I just sort of touch base to see whether Professor Higham's with us? Not yet?

Ms Gepp: He's not yet.

Mr Muir: Yes.

Ms Gepp: But I just did have one question sir, I think - - -

Mr Muir: I see. Very good.

Ms Gepp: - - - if that's all right.

Mr Muir: Thank you, and this is of?

Ms Gepp: Mr Patterson.

FURTHER CROSS-EXAMINATION BY MS GEPP:

Mr Muir: Yes.

Ms Gepp: And it may be that the Panel taking Ms Hampson's approach, doesn't need to know this. But just before lunch I was asking about the extent to which the waste water treatment plant and on-going water treatment costs have been factored in. Are you able to give any clarity on that?

Mr Patterson: Well the waste water treatment costs during operations that had already been designed would've been included in the modelling. The post-closure that was the conversation regarding the Trust structure.

Ms Gepp: So I asked Dr Webber about the cost of the waste water treatment plant and he said he wasn't able to even estimate at this stage what that would be. So would that have been factored in, when the expert who is designing it couldn't say what the cost of it would be?

Mr Patterson: There would've been some assumption made surrounding it. But with anything in one of these models, there's always an element of some costs that are known with great certainty, and others where there is an element of you know expectation based on, you know, industry averages, or other appropriate techniques. And it's for that reason that in all the modelling assumptions on absolutely every line item even those where there was certainty there was a 10 per cent additional contingency added across everything in the project financials.

Ms Gepp: Yeah, and we don't really have any basis to know whether that 10 per cent contingency is enough, not enough, do we?

Mr Patterson: I mean costings could go either way. They could be more expensive, they could be less expensive, and through the process of you know implementation and detailed design, you know, any cost is going to move around.

Ms Gepp: And I think your first comment just after lunch was that the Trust endowment is expected to be more than the amount required for the post-closure costs. But equally we don't have any basis on which to assess whether that's accurate, do we?

Mr Patterson: I don't have any basis. I've simply gone from the contents of the memo that has been put forward by the applicant about the Trust, and I understand that that work, is, you know, is on-going in that space.

Ms Gepp: Thank you.

Mr Muir: Ms Vella.

FURTHER CROSS-EXAMINATION BY MS VELLA:

Ms Vella: Thank you sir. Just one question, picking up on Dr Kaye-Blake's comment. Mr Patterson have you been asked to consider the cost of any alternatives in terms of methodology for this project, for example back-filling; open cast pits; or underground mining instead of open cast?

Mr Patterson: I have prepared my projections based on the project as put forward. I haven't considered alternatives that haven't been put on the table.

Ms Vella: So you haven't been asked to consider those alternatives?

Mr Patterson: I haven't been asked.

Ms Vella: And if you were to estimate, would you – well could you provide us a high level view on whether you think the project would remain profitable if, for example, underground mining was to be used as a method?

Mr Patterson: I don't know. That's not the option that's on the table and I don't have any information on that.

Ms Vella: No. But if it was in the tens of millions, for example, you'd say that was a relatively small number for internalising impact of the overall scale of the project?

Mr Patterson: If it was tens of millions, it would be a relatively small number.

Ms Vella: And what about hundreds of millions?

Mr Patterson: Look I'm not prepared to entertain total quantums for a completely different engineering solution when I have no – I have no direct understanding in this space.

Ms Vella: Thank you.

Mr Muir: Yes. Thank you Ms Vella. Any other cross-examination? Right. In the absence of Professor Higham I'm going to start on the next topic, but we will break at 2.30. But I may be wrong in thinking that the next identified topic of assessing market and non-market adverse impacts has probably had a fairly significant audience already. And this is very typical of what has happened in all of the concurrent hearings to date. As the day goes on, we find that many of the agenda items further down have been referenced earlier. Could I just put it this way? Are there any market and non-market impacts that any of the experts wish to address beyond those that we've already discussed?

TOPIC 3: ASSESSING MARKET AND NON-MARKET (ADVERSE) IMPACTS

Dr Kaye-Blake: Yes.

Mr Muir: Yes, thank you.

Dr Meade: Yes thank you.

Mr Muir: Dr Kaye-Blake.

Dr Kaye-Blake: So what I think we haven't really talked about yet are the impacts on Cromwell and specifically the ease of doing business. We have touched on housing, but I don't think we've dealt with it to the extent that it is an issue. But then there are also issues like roads and schools and things like doctor's offices and recreational facilities.

Basically, all of those things are at capacity in Cromwell. So, one of the doctor's offices stopped taking new patients sometime in the last couple of years and then they started taking them again. But they were full up. One of the primary schools was full for a while. I don't know if it still is. We know that businesses struggle to hire people, and also some of the roading, you know, has issues. For example, coming across the bridge onto State Highway 8 they've had several accidents there and they've had to redesign the intersection. Some of the turns onto Barry Ave in Cromwell are already difficult at peak times.

These are all impacts that can be given values. They are all impacts either non-market or market impacts that will affect the community and they are costs that are being created by the project, by the proposed project.

So if we're going to – we've talked about the benefits. We also need to talk about these costs. How big are they? What are they? Who bears them? And those just haven't been brought into the analysis and I suggest that they should be.

Mr Muir: Might not we have to also consider, as we did with the labour markets, the sort of dynamic quality here. Public policy can be expected to respond to the absence of school, adequate schooling in the Cromwell area with the influx of 380 new imminent employees? There's been a lot said of the fact that so many of those employees are going to be coming from some other part of New Zealand so thereby commensurately reducing demand on schooling facilities elsewhere. Presumably all of this can be modelled in some very high level way.

Dr Kaye-Blake: Exactly, it can be modelled. But what I'm suggesting is it hasn't been and that would allow us to make a better judgement about what the impacts are for Cromwell, faced in Central Otago, et cetera. We simply don't have the information.

Now we talked about the difference between an economic impact assessment and a cost benefit analysis. In a CBA you would have done this properly where you would have actually made a catalogue of all of these impacts and then tried to make a decision about you know whether you put a value on them or not, and what those numbers might be. But that's just been skipped over, because all we have is just the bare bones of an EIA.

However, those are impacts that will be felt by the community. And even if they're remediated, you know building a new school takes years, expanding school roles takes years, changing roads takes years. And so there's still a time period in which the community feels the negative impacts.

Mr Muir: Thank you. Did you wish to comment on that Mr Patterson?

Mr Patterson: Yeah, I think it's important to orientate ourselves to the economic geography of Inland Otago. It's an unusual assumption to make that all 350 workers would reside in Cromwell itself. If we look at the location of the mine, while it's relatively approximate to Cromwell, it's also within the commuter belt of Alexandra, Queenstown, Wanaka, Hawea. The applicant's survey of people that have expressed, put forward employment expression of interest, demonstrated that about two-thirds of people had access to accommodation spread across these areas. And I believe it was 94 per cent said they would take company transport from a range of these listed areas if it were made available.

If we look at Census 2023 data, there's an enormous amount of commuting between Cromwell, Wanaka, and Queenstown. If we look, for example, from the Wakatipu Basin, so centred on Arrowtown, Queenstown, Frankton, there are about 225 people a day that commute into the industrial area of Cromwell, and the commuter flows also going back the other way.

So I guess I'd like to put some perspective of these 350 people. It's in a high growth area. It has sustained more than four per cent population growth over the past 20 years on average each year, which in some years totals thousands of people. The marginal additional pressure on the Health and Education system, is going to be spread over a wider area that's already experiencing high growth.

And slowly but surely, we are seeing movement from Central Government to begin to lean into some of these issues. In the most recent budget, for example, there was additional provisions for classrooms for a new high school site. We've recently seen a significant investment in local delivery of health services, which is looking towards a plan to establish a new hospital in the area.

So these things are beginning to happen anyway.

Ms Sweetman: Could I just ask a question?

Mr Muir: Yes.

Ms Sweetman: Mr Patterson are these types of things that Dr Kaye-Blake's raising, would they normally be covered off in a social impact assessment that then an economist could look at?

Mr Patterson: Some of those things could be.

Ms Sweetman: Dr Kaye-Blake would you, if you were undertaking such an evaluation, would you normally premise that on a social impact assessment or something similar?

Dr Kaye-Blake: Yes, exactly. And I've been surprised that there hasn't been a social impact assessment as part of this, because I would've ordinarily seen one in RMA work.

Ms Sweetman: Thank you.

Dr Meade: Excuse me, if I could perhaps add some further comments, thanks?

Mr Muir: Yes.

Dr Meade: Thank you. So really just to build on I think what Dr Kaye-Blake has been saying but with a different dimension. And it comes down fundamentally to do we expect this mining project to be somehow transformative in a way that, for example, if we build new infrastructure, such as new schooling, for example, to meet the extra demand of the influx of workers, is that going to be a long-term infrastructure that's maintained when the relevant activities have ceased?

Now I should note, of course, that a great deal of the relevant activities are actually in the construction phase, not in the operating phase. So there's a short-term spike in demand and would we really expect that we'd build a long-term infrastructure to reflect that long-term spike in demand? Could we end up with a white elephant, should that demand not persist? And that's quite material.

And also is material in respect of the comment you made sir, about if we get increase in demand in this region, and we're attracting people from other regions that the demand for schooling, for example, might go down in those other regions. It possibly could so in a way that's permanent, and results in things like schools being closed. We don't know because we haven't seen the assessment obviously.

But we have to think about – and this is going back to Dr Bertram's points earlier, about dynamic and static effects. Are we expecting these mining projects, these mining impacts to be long-term benefits or long-term costs? Or are we expecting them to be short term things that could actually lead to long-term costs if they do result in things like white elephant infrastructure being built, or other infrastructures being abandoned because we get some reduction in demand. And we just don't have an assessment of what they are.

And I'd also add, by the way, in terms of other values, and we alluded to this before in the conversation about things like existence values, when I was talking about the total economic value framework, and who would care, for example? And this was, I think, in the context of perhaps visiting nice spots in the area. Landscape values attaching to this region will be attached by people from all over the country. There are a lot of people in Auckland who love the idea of yeah Central Otago with wonderful mountains and all that sort of thing. Wonderful pristine landscape, et cetera.

Mr Muir: Even if they don't visit, this is the point you've made before.

Dr Meade: Absolutely, sir. So that's right. So this is where existence values don't require use values. A lot of people just love the idea of a thing. A lot of people love the idea of blue whales existing, even though they'll never see one in their lifetime. [over speaking]

Mr Muir: Often until such time as they have to pay for it. And observation based in realism.

Dr Meade: But sir this is where people like Dr Blake and myself when we design our experience, we always attach a cost with a statement. So we don't just ask people, "Do you like blue whales?" That's kind of dumb, because there's no cost and lots of people are going to go, "of course I love blue whales". But if we say to them, "Look here's a world with this many blue whales, and this much income, and here's a world with some different number of blue whales and some different number of income, which do you prefer?" this is precisely how we put a cost on these things and we don't just assume that, you know, cheap talk is the way to do this. We go to great trouble to avoid precisely that issue.

Mr Muir: What is the realistic possibility of white elephant structures in an area of such consistent and strong growth as Central Otago/Queenstown-Lakes District? Structures that might respond to 380 new jobs created in the area with those people dissipated around a number of foci within the area, in an area that has, for years, outperformed the balance of New Zealand in growth? It's a fairly unlikely scenario isn't it?

Dr Meade: What I would say sir, and this actually addresses a point that Mr Patterson raised earlier, about the rate of house building in the region, and the rate of jobs being filled in the region. We have chronically low unemployment in this region over decades in fact. We have chronic housing issues in this region, notwithstanding the amount of houses being built. And partly this is because of something which economists I think generally try to avoid using, but I'll use it now, sometimes there are laws people refer to. There's a famous old one called Say's Law, that says supply creates its own demand.

So, in other words, if you build more houses in the region and more schools, you're not going to solve the housing crisis. You'll get more people moving in and it's valid to consider what benefit that means. But it doesn't mean you're going to resolve the unemployment issues, the chronically low unemployment issues. It doesn't mean you're going to resolve the housing crisis issues. You'll probably just get a lot more Aucklanders moving to the region. They might attach their own disbenefits to that.

Mr Muir: Very good. It might be getting just a little too theoretical. Any other questions emerging out of that?

Dr Kaye-Blake: I would like to take issue with this idea that there are 300 jobs, because that underplays the amount of negative impacts and costs. Because the

351 is the direct employment figure. But in order for this project to have the economic impacts that it says it's going to have, it needs to have other people also involved. And so the number here is 600. If you don't have someone to build the house for the mine worker, then you can't have the mine worker. If you don't have a school teacher for the child of the mine worker, then you can't have the mine worker.

And so I do object to Mr Patterson using the 300 number because clearly as he has already stated 300 is not the number that is required in order to have the economic benefit of the $6 billion or whatever.

Mr Muir: Mr Patterson.

Mr Patterson: I'd say that whether we're considering the direct employment or those indirect employment effects, which are very uncertain. They could scale up to that level. They may not be that level. They might be slightly more. The reality is, we're still in the same realms of order of magnitude and I quoted specifically with regards to housing earlier, figures of just how much of an uplift in the housing supply we've had in the past 12 months. And in 12 months alone we've grown 500 above our long-term average in terms of houses. So within such a short period of time is the ability to internalise those sorts of issues.

And just one more point on housing, the key issue that we suffer from in Inland Otago is not the ability to build a high volume of houses. The biggest issue is actually the affordability of housing. And this is precisely the sort of project that actually I guess is helpful in some ways. And I say that because there is such insatiable demand to live in the area that seemingly, at least for the present time, no matter how quickly we build the price doesn't seem to come down, like it has in other markets where you know the market's been flooded with supply.

So they're offering higher paying jobs that offers more opportunity for people to be able to afford a dwelling at market rates rather than the alternate mechanisms which we're struggling to scale up, such as through a Community House Trust, for example, providing housing through its own mechanisms.

Mr Muir: That was a point that was imprinted on us by the representative of the Mine Supporters Group in Cromwell hearings.

Ms Sweetman: Sorry, I'm just a bit confused about that point Mr Patterson. You're saying that more – the mine workers having a greater salary will mean they can buy the houses. That doesn't really address housing affordability across the board though, does it?

Mr Patterson: No it doesn't, but all I was trying to make is that the biggest issue in the area is housing affordability, not whether or not someone – whether a house can be constructed for that, you know, for a person. We, you know, we've been amplifying our build rate over recent times and that doesn't seem to be making a dent in the affordability issue, despite at present building at about four times the national per capita average.

Ms Sweetman: What's the average household income for this inner Otago area? I'm sure it's in your evidence?

Mr Patterson: I don't have it off the top of my head. But we can actually - - -

Mr Muir: [inaudible] about $70,000.

Mr Patterson: Oh is it? Yeah the average salary is about $70,000. [inaudible] Yeah so the average salary's give or take $70,000.

Ms Sweetman: What about household income?

Mr Patterson: That's – I can virtually just look at it in front of me. Forgive me, this hasn't combined the two, but Queenstown-Lakes is looking at – this is according to Infometrics data, a touch under $150,000 for Queenstown-Lakes, and Central Otago is about $130,000, just over $130,000.

Dr Bertram: It might be helpful if I suggest another way of approaching topic 3. Just this goes back to two sections in the joint witness statement we approved the other day.

Mr Muir: Yes.

Dr Bertram: Paragraph 54.

Mr Muir: Just one moment.

Dr Bertram: And paragraph 73. And I'll try to explain the relevance in those two paragraphs. The first thing is that it was one of the problems we had with the experts' conference was that we ran out of time. And one of the really important tasks that I felt we should've taken further was to nail the numbers down on the quantifiable monetised benefits. And as you can see at 54, I put forward some propositions about how we might nail the numbers down so that we get an agreed range, rather than one group working on Mr Meade's numbers and another group working on Benje Patterson's numbers.

And what I noted there, and my point is, we didn't agree on these numbers because we didn't have the time to debate them. And as a result there's no record here of what other experts and myself thought about my calculations. And Mr Patterson didn't have the chance to respond to them.

But what I draw attention to is the fact that in his section 53 responses, Mr Patterson had agreed with Dr Meade, firstly that we should be using GNP rather than GDP, or at least it was reasonable to do so, because that sets aside the outlier profits to overseas owners. And he offered a number of how that would change his GDP impact.

Separately, in paragraph 55 of his response evidence he also accepted that it would be reasonable to use a present value rather than just add up the undiscounted annual figures, and he did a calculation and showed what the effect of taking his GDP number and discounting it. And I simply put those two together, took the GDP number, discounted it to GNP and then present valued it at what I thought to be the sort of impact of Mr Patterson's efforts, and I reached a number of around about $120 million annual monetised benefit from what Mr Patterson had conceded against what Dr Meade was then arguing was $90 million.

Now Dr Meade has since come down to 67 on the basis of a difference in the gold price. But I did suggest that, as a start, we could maybe agree, we could converge somewhere around about the $100 million annual, as being the annualised present value GDP based number that we would start with before we took opportunity costs off and before we adjust that for things such as the probability of tax payments coming in as scheduled and so on.

And so my proposition there, in 54, was that we might be able to get a number as an anchor from which we could proceed to the more difficult and taxing issue of the non-market values. And that's why in paragraph 73(a) I've agreed with Mr Patterson, because I think he and I both take the view that the appropriate way to deal with a lot of the non-market things is indeed for a Panel to sit and take detailed evidence from experts in the various field and consider precisely how much weight those matter should have.

And then we have the incommensurability problem. On the one hand we have – we would have a number from which we're working on the monetising direct stuff, and on the other hand we would have a bundle of evaluations of the strength of the non-monetary, and in-between we would have the adjustments that we would have to make for opportunity cost, because we haven't agreed on that, and the things like the probability of tax payments coming in as scheduled.

Now, Dr Meade has suggested that he would be coming down to $67 million for his anchor number and then working down from that with opportunity costs. I had hoped we could get Mr Patterson to $120 million for the direct impacts and then take out opportunity costs, which I think should definitely be at least 75 per cent for labour, because this is a fully employed area, and quite a substantial discount to come off that.

The result of that calculation gives you a number I think a bit south of a hundred million which represents the monetised, or benefit side of the ledger. So now we have to turn to the other side of the ledger and ask, and I framed the question quite differently, I think, from how a couple of the other experts do, it's true that we have plenty of economic methods where we're trying to value these things. We've got monetary values on. But I always prefer to turn the question around the other way and say, "Here's the gains we've got. Now how much would the non-monetisable things have to end up being worth to persuade me that this project is, or is not a goer?" In other words I look for a difference between the monetised and the non-monetised.

Mr Muir: That's not quite the statutory framework though is it?

Dr Bertram: I know. But I'm trying to suggest how, if one thinks about it from this point of view, how one might be able to mould that into a statutory frame. So, if you consider that we've got 4.4 million adults in New Zealand and you say, "Well suppose they think the non-monetised, let's suppose it's your judgement that the non-monetisable stuff is worth 25 bucks a year per adult, then you've got a hundred million of monetisable benefits. Eleven or 12 bucks a year per adult you've got about 50 million of monetised benefits. The numbers are not as challenging as they might seem.

Ms Sweetman: But it does require a lot of assumptions?

Dr Bertram: It'll require a lot of – well I'm trying to get as few assumptions as possible because I'm very conscious that trying to build a monetised version of the non-monetary stuff, as you know, as Richard Meade and Dr Kaye-Blake are suggesting is doable, but it's expensive and very intensive, and quite contentious. If you come at it the other way, and say, "Yeah what would the non-monetisable have to add up to, to persuade us that this is a – it's on a knife edge, or a goer, or not a goer?" It's just a way of trying to frame, in your own mind, the magnitude that you have to attribute to the non-monetisable material that the experts have brought before you. How you're going to [over speaking] statutory frame, I'm not sure, sorry.

Mr Muir: Can we just stop for a moment.

Mr Barry: Thank you Mr Bertram that is helpful, and the reverse engineering approach, as the way I would describe that as, can be useful. But are there possibly some non-monetary benefits to the project, as well as non-monetary costs which might complicate the analysis?

Dr Bertram: And I mean there's one obvious one. We know that at least one, you know, there's at least one citizen in New Zealand for whom the putting a hole in the landscape at Bendigo is a positive not a negative. All right that's Shane Jones and he's publicly said, it's a beauty spot and we're better for it. And I'm sure that he speaks for quite a substantial number of people. So, in doing this sort of exercise, you know, you've got to be thinking, just imagine we take the New Zealand population, which way do we think going forward?

And I guess one thing from experience that really shocked me on this was in 2010 when we had a big debate about mining in the Conservation Estate in which I was involved, and I wrote a big report for Forest and Bird at that time, and I thought this was something we would be analysing away on paper, behind the bike sheds and arguing about in situations like this. And the next thing I knew 50,000 people walked down Queen Street in Auckland shouting about it. And that sort of transformed, I think, how we felt about where the New Zealand public stood on intruding on the Conservation Estate. It's not conclusive evidence. It's not a willingness to pay, or willingness to accept [inaudible]. It's just one of those surprising things that comes out of the woodwork about the politics of evaluating outstanding national landscapes and viable ecosystems, all that sort of thing, and I honestly don't know how you bring that within the statutory frame.

Mr Barry: I think it's better we stick to the economics and the empirical evidences rather than diverge into the politics.

[over speaking]

Mr Muir: Just let Commissioner Barry finish please.

Mr Barry: I'm just wondering whether any of the other experts would have a view on non-monetary benefits? Perhaps, in particular, Mr Patterson might like to comment.

Mr Patterson: So I haven't thought in great detail about those. However, there was one non-monetary benefit that I acknowledged, that I identified in my section 53 responses, and that was actually with regards to tourism and recreation. So in the recreational research – that didn't sound like a good descriptor – the recreation expert, on behalf of the applicant, his name has slipped my mind.

Ms Sweetman: Mr Greenway.

Mr Patterson: Mr Greenway, thank you. He talked to a number of user groups in the area, and one thing that stood out to me is quite a number of them said, "Hey look if you give me an alternate accessway that meets these sort of criteria, I'll be okay. By the way, could you please make sure there's a viewing platform, because our members would love to see a mine that's operational".

So that is a positive benefit. Specifically, and I'm sorry that we don't have Dr Higham here, but I need to raise it in this answer here, that there are actually touristic experiences that design themselves to trade off these very benefits. We have mine tours at like the Martha Mine, and Macraes, and in Australia, you know, quite interestingly there's a luxury train, the Indian Pacific, goes from Perth to Sydney and if you look at the highlights of that tour they include getting to go inside an open pit gold mine, starlit dinners in a wine region, and scenic vistas along the journey. So they have a luxury clientele that are going after all three products. So yes there is a potential for there to be some, I guess, positive benefits.

Mr Muir: Non-monetary benefits?

Mr Patterson: Yeah.

Mr Muir: So we don't have Professor Higham yet, do we?

Ms Gepp: No I'm sorry, sir. We're just trying to track him down.

Mr Muir: That's all right.

Ms Gepp: He said he would be back at 2.30.

Mr Muir: We'll just box on. I'm just a little bit lost as to exactly where I am. So someone can - - -

Dr Meade: Excuse me sir - - -

Mr Muir: In any event I have Dr Lees wanting to make a contribution while I gather my thoughts as to whether I'm about to invite cross-examination or - - -

Dr Lees: So just responding to Commissioner Barry's question, I think if I was to go through kind of a CBA exercise and list the non-monetary benefits, I think they're nebulous and a little bit harder to find than the non-monetary cost side of things. You could think about some skills. So I'm thinking about raising opportunities for New Zealanders to participate in different occupations than, you know, leaving to Australia to pursue a mining kind of job. But I think, on balance, those non-monetary benefits are likely to be much smaller than the non-monetary costs that have been raised throughout the discussion today, and I'm sure in your earlier hearings.

Mr Muir: Yes.

Dr Meade: Excuse me sir.

Mr Muir: Just one moment. Dr Meade.

Dr Meade: Sorry thank you sir. I just wanted to clarify something regarding Dr Bertram's reference to my 67 and $90 million figures. I'd stress they did net off opportunity costs of labour. So, that's not the headline figure that you'd take off the opportunity costs from. I've already deducted them in those figures.

Dr Bertram: Oh yeah sorry Richard. I misunderstood that.

Dr Meade: Right, thank you.

Mr Muir: Just then rounding back on Dr Bertram's proposition, is there any utility in our allocating a period of time? And I realistically expect we'd have to spend at least half an hour on trying to pursue a common figure of somewhere between Dr Meade's $67 million and what Dr Bertram suggests might be Mr Patterson's discounted annual figure of something, I quote, "closer to $120 million". So I'd have to ask first, Mr Patterson is Dr Bertram correct in saying that we would be down to around $120 million annualised over the life of the project, capturing the MPV? This is paragraph 54 of the joint witness statement.

Mr Patterson: I haven't gone through his calculation of my calculation to check. So I couldn't comment with specifics until I did that. The one thing that I would caution is – so my initial figures are on an annual basis were in real terms, which mean we've accounted for inflation.

Mr Muir: Yes.

Mr Patterson: Then in my earlier report I had summed them together to give a cumulative effect. So it was adjusted for inflation, but not the time value of money. My colleagues quite correctly said that, "Hey we really should account for the time value of money. That's why we bring the Treasury's eight per cent in.

Mr Muir: Eight per in.

Mr Patterson: So we discount that into an MPV. Now while theoretically the gymnastics could continue, and we could then divide that by the number of years to get an annualised present value equivalent figure.

Mr Muir: Yes.

Mr Patterson: And conceptually I can't see that being a problem, so to speak. We'd also, when we talk about other industries, rather than speaking about them in real terms, use some sort of annualised present value equivalent, which would be, you know, some point in the future that was – it was, you know, roughly part way through the project, discounted back to today, to become, you know, the equivalent in present value terms.

So I guess all I'm saying is, we're going around in circles with this gymnastics, which is fine. But we just have to make sure that we were comparing apples with apples. So, for example, with the tourism sector, or viticulture, any of the numbers that have been put forward are real figures as of today. They're not annualised present value equivalents of seven, eight, nine years in the future. So that would be the only comment that I would make that we could, inadvertently through that process, just create a little bit more complexity for ourselves in terms of our comparisons.

Mr Barry: Thank you. Could I ask – I'm not sure if it's the right time, but while we're on the numbers and just going back if I might to Dr Meade's evidence. Dr Meade in your evidence you quite helpfully have a chart on page 33 that sort of breaks down the adjustments you make into individual components of the adjustments.

Dr Meade: Yes.

Mr Barry: And just going from the second bar to the third bar, my understanding is that the adjustment there is essentially discounting for the overseas ownership of the shares. And so you're taking out the foreigners, the benefit of the foreigners, and looking only at the 40 per cent of the shareholders who are New Zealanders.

Dr Meade: That's correct sir. But it's before I further make an adjustment for the transfers coming from, you know, taxes and royalties from New Zealanders. That was how I went from my 90 to 67 ultimately. So this is still before I make that adjustment, but I have reduced the returns to shareholders with a share that accrues to the overseas shareholders.

Mr Barry: Yeah, I understand thank you. And I don't think it's that point I was wondering about. I'm just wondering how you went from that second to third one with numbers of post tax, capital contribution to GDP, so the green part of the bar of 122.7 down to 24.4 and quite a big adjustment, about roughly a 70 per cent [inaudible]?

Dr Meade: I'd have to go back to my calculations to check that myself, I'm afraid. But that was a – it's a mechanic exercise obviously so I'm taking off 50 per cent of, or 60 per cent [inaudible] is effectively going away, and that's the biggest contributor to these – that is the return to capital isn't it? So I've taken off 60 per cent of [inaudible]. But I think the point is why is that 24.4? Is that - - -

Mr Barry: No, well that's a lot more than a 60 per cent reduction.

Dr Meade: Yeah.

Mr Barry: That's more to me.

Dr Meade: Yeah, yeah. So I'd have to check that sir, and revert. I wouldn't be able to do it off the top of my head right now.

Mr Barry: That would be very helpful.

Dr Meade: Yeah. Okay, thank you.

Mr Muir: What I've decided to do in respect of the point that Dr Bertram raises, which is the suggestion that we apply some of our remaining time to this issue of exploring a possible common number, is I'm going to park it for the moment to see whether we do have time and can deal with it within the two hours that we have left. But I want, at this stage, now that we are joined by Professor Higham – good afternoon Professor Higham.

Professor Higham: Hello. Good afternoon.

Mr Muir: Good afternoon. So my apologies Professor Higham we weren't able to get to you this morning at the earlier hour of 11.30. But we're going to just break from our previous discussions and move to topic 6. We identified a number of topics and put them on the whiteboard, and one is dedicated essentially to evidence which you singularly give on behalf of the section 53 invitees, and that is in relation to the subject of tourism. And so I'm going to ask you please to lead off on that with perhaps a brief, or a minute at most, summary of your position. We'll then engage others of the experts here and then the Panel. I'll then pass over to counsel to see whether there is cross-examination on this subject before rounding back to the Panel, and then hopefully releasing you.

TOPIC 6: TOURISM

Mr Muir: Thank you Professor Higham. The floor is yours.

Professor Higham: Wonderful, thank you for the opportunity to speak to the Panel. I want to talk briefly about landscape values and tourism impacts that I believe are far beyond the focus of the applicant, local residents and neighbouring properties. The applicant acknowledges the impact of the proposed mine on adjacent properties.

In my view the landscape is the unique selling proposition for local businesses on adjoining land, and I agree that neighbouring businesses will be unable to convince visitors that the mine is safe and clean and compatible with their businesses, including organic businesses, and that they'd be unable to conceal that the tailings dam is toxic and prone to potential failure. I do believe that the mine will become the thing that Bendigo is known for in perpetuity, as in the case of Macraes.

But the focus – my contribution today is that I believe that this local focus misunderstands and misrepresents the spatially connected nature of tourism, in that tourism is a system that is spatially connected and dispersed, and it is characterised and defined by modes, networks, connections and flows. And I want to make the point that Bendigo, and Central Otago, are deeply interconnected with tourism systems across several spatio-temporal scales.

So, firstly at the regional level. As at the local business scale on neighbouring properties, Central Otago's landscape is also the USP for regional tourism. As expressed, for example, in tourist trails that are a great expression of connectivity and flows. Cycle trails are particularly prominent currently in tourism development in the region. So too are wine trails, walking trails, heritage trails, dark sky tourist trails, and such like.

And quite a lot of research has focused on the future tourism value of regional trails, such as the current and future potential of trail riding in Queenstown-Lakes and dark sky trails that will be dark sky trial in Canterbury. So I would like to suggest that protecting Central Otago's iconic landscapes and night skies are critical to the specific area.

Secondly, at the wider macro regional scale again these unique landscapes are the USP for regional tourism dispersal, and I want to mention a research project that I was involved in that was commissioned by QLDC, completed last year on visitor optimisation and that research project demonstrated various things. One was that Queenstown is the engine of regional and national tourism in New Zealand and future growth scenarios, as expressed, for example, in the current Government's tourism growth roadmap to 2034, highlights the need for regional dispersal, and the need for Queenstown to work very closely with Central Otago and other neighbouring regions, such as Fiordland and the West Coast.

And thirdly, at the national scale, again the unique landscapes of Central Otago are a really important part of the USP for our national tourism brand, which has been the focus of internation research by people like Professor Nigel Morgan at the University of Surrey, who identifies the enormous success of this global brand. Now it's in its 27th year, based on images of unique and untouched landscapes and expanses of largely undisturbed nature, which creates very high expectations of that brand, and makes protecting Central Otago and New Zealand's unique landscapes absolutely essential.

Fourthly, at the global scale, again a recent piece of research focused on the lifetime value of tourists visiting New Zealand commissioned by QLDC to explore what visitors continue to contribute to the New Zealand economy post visit. And the idea with that piece of research was that based on world-class experiences, tourists often wish to "biologically recreate holiday memories after their visit". And this is what's referred to as lifetime value, which includes tourists buying more New Zealand products and services after they return home, and longer-term connections to New Zealand, such as international education, investment in businesses, and in some cases, migration.

That QLDC report recommended, "International curation of the visitor experience which could increase the value of post-visit consumption from $600 million currently to between one to two billion dollars in the future".

And I want to emphasise that lifetime value, I think, is particularly important to the Central Otago wine industry. Again, much research internationally is focused on the value of wine tourist experiences, such as tasting wines in the exact location where the grapes are grown, meeting wine makers, cellar door tastings and vineyard tours, which have spurred global interest in wine tourism and post-visit consumption. That research has identified the close links between landscape values and wine experiences based on the unique interaction of climate, landscape and topography, encompassing soil composition, elevation, proximity to water and weather which gives wine a unique sense of place.

And once again I'd like to suggest that the proposed mine, certainly in my view, undermines the intentional curation of visitor experiences and is likely to delete impact, visitor consumption.

And I'd like to make one final point relating to visibility, because again unlike Macraes, the proposed mine will be highly visible across multiple modes and flows of tourists. For example, flight paths connecting Auckland and Christchurch with Queenstown will have direct line of sight of the mine on low approach to Queenstown airport. I'd also like to emphasise that the major - - -

Mr Muir: It's not a typical approach path into Queenstown Airport.

Professor Higham: It's one of the approach paths.

Mr Muir: Yes. It's not – it's a very unusual approach path into Queenstown.

Professor Higham: I'd also like to mention that the South Island major flow of tourists connects Christchurch via McKenzie and Lindus Pass to Queenstown and then onto Milford, which again brings visitors into direct proximity of the mine. There's also a Queenstown macro loop, which is a great example of initial efforts to disperse visitors within the southern macro region, which brings the hub of Queenstown to the Catlins, Coastal Otago, Waitaki, McKenzie and back to Queenstown via Lindus, and the on-going development of the proposed cycle trail extension from Cromwell to Wanaka, includes a bridge at Bendigo which will bring cycle tourists into direct line of sight of the proposed mine.

So I just want to emphasise that these are really major tourist corridors and proximity to the mine will, in my view, impact experiences of landscapes, and probably negatively impact the quality of visitor experiences on brand reputation.

So just to summarise, I hope the Panel will recognise the multiple threats that this mine is likely to present far beyond local communities and adjacent properties and businesses, to include regional, national and global scales of the tourism system, and across future [inaudible] when we think about lifetime value of tourism. So, thank you very much.

Mr Muir: Right, thank you. I'm going to come firstly to Mr Patterson.

Mr Patterson: Thank you. Look I think the first point to get across is there's a conflation here of visitor activity that occurs in places that are not connected to Bendigo. So, if we look across tourism in the entire Inland Otago area, so considering both Central Otago and Queenstown-Lakes, there are about five million commercial guest nights a year. Just five per cent of those occur within Central Otago, the entire Central Otago area, so it's very small.

Going through in my section 53 responses, I came up with an estimate of about 17,500 potential visitor days in Bendigo, compared with that five million across the tourism region as a whole. So just point three of a per cent of visitor days occurring in areas immediately adjoining the mine.

Now I think it's highly unlikely that a visitor to Queenstown, who it doesn't appear that any of them, in any great shape or form, are specifically wanting to visit Bendigo at present, is going to conflate their Queenstown experience with what they may or may not have seen if they were in the minority of visitors who happened to drive past the mine site over an hour before they reached their destination. The two don't go hand in hand.

In the New Zealand context I make the comparison that a visit – have we seen any signs that Rotorua's tourism sector is suffering because people may have seen the Martha Mine just over a hour before they reached Rotorua? I haven't seen any evidence of those effects.

In the Hunter Valley in Australia, and I have to raise this again, because it was interesting just before our expert conferencing, the Hunter Valley Wine and Tourism Association provided a letter of support for COWA. But curiously within it, it essentially said, "It's not ideal. It's difficult to operate alongside open pit coal mines, but we do have a large tourism and a large viticulture sector that do continue to operate immediately alongside these mines". And I already have said so far about, you know, visitor itineraries that in fact embrace both angles, both mining and tourism within them. So it's not solely a one-sided bet by any stretch.

I just want to make one more comment about this lifetime value of the visitor research. In fact I was one of the protagonist of that research. So it's always interesting when it's quoted back to me. Essentially that research was saying the visitor journey – the visitor when they come to New Zealand it's not only about what they spend when they're here it's also about when they return. But to do that you need to intercept the visitor, where there's a high concentration of visitors with the product that you're wanting to sell to them post visit.

So it's not clear to me against the entire New Zealand context, if you've got a few thousand visitors in Bendigo, some who may or may not be international visitors, being offered a very limited supply of wine that that's going to materially life the lifetime value of exports from New Zealand. You need both a shop front and a product which – of a consequential scale. Because only a certain proportion of these visitors will be converted. So that's not an argument in this case, I don't see.

Ms Sweetman: Can I just ask a question about your comparison with the Martha Mine and Rotorua? Is the Martha Mine on a tourist route to Rotorua?

Mr Patterson: It's one of the ways that you can drive – you could drive through if you've come through from the Coromandel. It's important to note that, you know, visitors to Queenstown they don't all arrive via vehicle. In fact 35 per cent arrive on domestic flights, 27 per cent on international flights. That was paragraph 113 of my section 53 responses. So that's well over 60 per cent arriving by aircraft into Queenstown. And then there's also different roading corridors that they could arrive from. It could be down the West Coast, it could be through, you know, from Alexandra, it could be from the south from Invercargill, as well as obviously past Bendigo. So it's a subset that will go past.

Mr Muir: And perhaps a subset of those who will observe it as they drive past.

Mr Patterson: Yes, exactly and then it's another stretch to say, "Okay what I saw an hour ago now is going to influence whether or not I tell my friends and family that they should go to Queenstown".

Mr Muir: Could I just come back to Professor Higham's, because it has been raised, is the subject of the Hunter Valley. Please excuse me, I'm a part-time Australian, so I spend a lot time in the Hunter Valley, [inaudible] wine consumption habits, I don't know. I am frequently to be seen there. I don't think that it is any news to you that it is regarded in New South Wales, because of its proximity to Sydney, as a pre-eminent tourist destination and has responded accordingly with everything from wedding chapels, to five star accommodation and everything in-between. The Hunter Valley has 41 active mines at the moment, all of which I think are related to coal production, perhaps something that carries a level of opprobrium even higher than you would allocate possibly to gold mining. A $18.4 billion contribution to the Hunter Valley GDP in the most recent year for which results are available from coal mining, representing 29.2 per cent of the area's GDP.

Compare that to viticulture, slightly less than one per cent, and tourism at 3.1 per cent. So it is the -- mining is the pre-eminent contributor to GDP within the Hunter Valley.

As I say it's geographically dissipated throughout the Valley, in the upper and lower Hunters, all of which are renowned wine growing areas with some of Australia's most pre-eminent labels.

Doesn't its success as a tourist destination for New South Wales in some ways belie the highly pessimistic view that you have of the construction of one gold mine around one hour's drive from what is the pre-eminent part of the Queenstown-Lakes District tourist hub, Queenstown? Doesn't it suggest that possibly your analysis is a little bleak?

Professor Higham: Well that's an interesting comment, and question, and I don't know the Hunter Valley context as well as you do. But I think that it's a little bit dangerous to draw comparisons unless they are valid comparisons. I don't know what the visibility of those mines are in terms of the visitor experience.

Mr Muir: Well take it from me, you can certainly see them if you want to.

Professor Higham: Yeah, okay. And so I'm not sure. But, I think my point is that in the New Zealand context, and as I've emphasises, we place a really significant focus on our 100 per cent pure brand, and the importance of that brand to tourism regionally and nationally has been very, very widely expressed by a very wide-range of tourism actives and organisations. And the critical importance of protecting landscape values as a key element of the visitor experience is absolutely central to New Zealand tourism. And I think that's the key point.

In terms of the visitor experience, Mr Patterson has continued to focus on the number of visitors who may be in proximity to the mine on the adjacent properties or proximal tourism businesses. But I think that misses the key point of my contribution here. And that is that you can think about visitor experiences very locally and place specifically, but we also have to think about flows across the landscape, and the current and future potential of trails, such as cycle trails, speak for themselves. And there's very rich data on existing trails, in terms of how many visitors they bring to the region, how many jobs they support, and how much economic income they generate.

The example recently of the Lake Dunstan Cycle Trail is a spectacular success in terms of visitors numbers, far exceeding initial estimations, supporting a very wide range of jobs and businesses, connecting communities. In that case Clyde, Bannockburn, Cromwell, as will be the case when that cycle extension continues beyond Cromwell to connect Bendigo and onto Wanaka, which is going to, if we look at existing cycle trails, bring tens of thousands of visitors a year into that location.

So these flows I think are really critically important. And of course, also the global brand, 100 per cent pure, that is so important for tourism [inaudible]

Mr Muir: You're not referring there to specifically to those who will cycle over the Ophir-Bendigo Range? You're referring to others who will be drawn into a lower altitude cycle network over time, right?

Professor Higham: No, I'm not referring to cyclists traversing from the Lindus over to the Manuherikia and to connect to the Central Otago Rail Trail, which itself has been a model of regional tourism development over the last 26 years or so. However, no I'm referring specifically to the Cromwell extension to connect to Wanaka. Interestingly - - -

Mr Muir: So Cromwell to Wanaka will come on – it's coming on which side of Lake Dunstan? Presumably on the Cromwell side of Lake Dunstan?

Professor Higham: [over speaking] specifics of the proposed extension, but my understanding is that there will be a [over speaking]

Mr Muir: Across the lake?

Professor Higham: At Bendigo across the Mata-Au Clutha River and continue on to Wanaka. I was also just about to mention that we're about to see, if it hasn't happened already, I'm a little bit out of touch because I'm overseas at the moment, but the Kawarau Gorge cycle network connection to Queenstown. The Roxburgh George is about to be completed. The Cromwell/Wanaka extension that I've just mentioned, as an on-going series of cycle network developments and I've just received actually this morning on my phone a proposed southern way cycle loop connecting Dunedin with the Mata-Au Clutha Valley, Queenstown, and the Central Otago Rail Trail, which could very easily include cyclists traversing the Thompson Gorge Road to connect Lindus with the Central Otago Rail Trail.

So I just want to emphasise that these cycle trails offer enormous future tourism potential based on existing trails and continued development of that network, and that it is really important in my view to try and protect the landscapes that are the absolute core resource for that form of regional dispersal and regional economic development.

Mr Muir: Yes, thank you. Yes, Dr Lees.

Dr Lees: I mean tourism is great. It brings new money to New Zealand, great export earner. Fantastic. A great way to think about kind of what are the benefits to New Zealanders, or what might the impacts be, is to think about how many fewer international visitors would we get if the mine is to kind of proceed.

Now a long time go, if this we pre-Covid, I used to do tourism forecasts. Used to do that under contract for MBIE. Did that for several years and as part of that, after we produced the forecast, we would go around and we'd talk with Auckland Airport, we'd talk with the airlines, we'd talk with Air New Zealand, we'd talk with Christchurch Airport. All the discussions wouldn't be on an issue like this. This is very small scale. It's hard to see how that would scratch the surface of the impact on international visitors that would be dwarfed by either kind of global impacts, global events.

So, when I hear Benje talk about kind of the visitor nights that would be within Bendigo, it's simply very difficult for me to understand the types of, you know, doom and gloom impacts on tourism that I kind of get from the tone of Mr Higham's comments. And I think through that kind of international visitor lens, I simply don't think that we would, or you know it's not consistent with the types of discussions I had when I was producing that forecasts, that we would think that a mine like this would have a dramatic impact on New Zealand tourism.

Mr Muir: This is a matter, no doubt, close to the heart of Otago District Council?

Ms Hampson: Tourism is an important industry for the District. Probably less so than it is for the other half of Inland Otago, being Queenstown-Lakes District, where it's a significant industry.

I tend to agree with Dr Lees, the way that tourism effects manifest in terms of economic outcomes is through the number of visitors, their length of stay and their expenditure. And unless anyone can show that, as Mr Higham calls it, proximity to the mine is going to change any one of those three variables, I find it very difficult to imagine that there will be any consequential economic impacts on tourism.

I definitely agree that landscapes have helped build the reputation of Central Otago's tourism brand. But the question is, if we modify the amount of, the small amount of landscape relatively speaking, how does that actually erode that brand having already established it? So it's, what is that marginal change, or what is the risk to that brand?

And the mine doesn't take away any tourism attractions. It doesn't remove the Dunstan Bike Trail, or it doesn't touch the Central Otago Rail Trail. It doesn't touch the ski fields. It doesn't adversely effect all of the things that are attracting tourism, to make decisions to come here and spend money. And on that basis I tend to agree that I struggle to see the doom and gloom aspect of the brand risk.

I think the brand is strong, and I think the branding is a controllable narrative. There are experts in tourism that, and marketing that get paid a lot of money to sell Central Otago as a tourism destination, and if they need to work around the fact that there's a mine, they'll do so. Social media, whatever it takes. I'm confident that they'll find a way to continue to promote this area as a special location for travel.

Professor Higham: Can I respond?

Mr Muir: Yes, in one moment. I'm just thinking about something. Yes, by all means, Professor.

Professor Higham: Thank you. I just want to say that I completely disagree with those assessments. The exclusive focus on international tourism is completely, I think, a misjudgement. The majority of tourist spending [inaudible] and many – I don't have a figure – but the majority, I suspect, of cycle tourists on existing trails in Central Otago are domestic tourists. So I think just focusing on will this impact the number of visitors coming to New Zealand, is I think an irrelevant question.

Mr Muir: It can't possibly be an irrelevant question. You're saying it is of less relevance than other experts have said. I think that we need to perhaps temper the broader statements.

Professor Higham: Correct. Apologies, your right. And in terms of the brand, I mean I think I just defer to the tourism experts in this country, including Tourism Industry Aotearoa, Tourism New Zealand who really know what protecting a brand and the importance of protecting brand value is all about. And the Parliamentary Commissioner for the Environment, in his 2001 Tourism Report, Destination Management Plans for Queenstown-Lakes, Lake Wanaka tourism, Central Otago and pretty much across the country, highlights the importance of landscapes in protecting brand value.

And although my research interest isn't specifically in the area of marketing, I am very aware of lots of marketing research that highlights the importance of protecting brand values. And one thing that comes out of that research is acute tourist sensitivity to health risks. It also highlights that it's not necessarily actual health risks, but also perceived health risks that will deter tourists from visiting and consuming tourism and tourism services and destinations.

So I think it's really important that we think beyond again only visitors who may be staying in or passing through Bendigo. But I think it's really important that we think about these wider critically important manifestations of tourism. And I don't want to be caricatured here as you know presenting doom and gloom scenarios. I think what I'm presenting here are very valid issues relating to tourism and regional economies, and regional economic futures in this country.

Mr Muir: Taking a national lens on this, does that say that we should never consent any form of extractive industry that results in the creation, or modification of natural landscape? All of that, you're saying, prejudices brand to an extent that it should be declined. Is that a logical place that your evidence leads us to?

Professor Higham: It's an extension of the argument but I don't think it's a valid extension of the argument. I think there are starkly varied contrasting circumstances around mines in different parts of the country, with different configurations, with different environmental hazards and risks. I think those profiles lead us to conclude that extractive industry in some parts of the country are less likely to negatively impact tourism than in others.

The Macraes mine I think is an example of a mine that, although I've travelled regionally in Central Otago and Inland Otago, I've never seen that mine. I've never flown over it. I've never cycled through it. I've never driven past it. It's not on these flows, these arteries of tourist mobility. But this proposed mine is. And so no I wouldn't say that that's an impression that I want to give.

Mr Muir: Thank you. Thank you is there any – I'll just round back, if I may, to Mr Patterson, yes and I see that Dr Kaye-Blake – perhaps we'll start with you Dr Kaye-Blake.

Dr Kaye-Blake: Thank you. I just wanted to add onto something that Professor Higham talked about, which is the interplay between tourism and other exports. So we know that overseas consumers are affected by the tourism experiences that they have had and that their families and friends have had. A specific example I can give you is some work that we did – it was about 10 years ago – led by Dr Roger Harker at Plant and Food Research, and Professor Miranda Mirosa was also part of that. She's from University of Otago.

We interviewed people in Shanghai about their purchases of New Zealand products. So we went into their apartments and spoke with them in their homes. And it was just fascinating how they might have three or four things, like a pottle of honey, and it might have been brought to them – oh sorry, they might've purchased it because it was New Zealand honey because they wanted to go to New Zealand, or because their mother-in-law had been to New Zealand. And so we saw that purchases of agricultural commodities was linked to the experience of tourists.

So I'm offering that to say I think that this discussion about tourism impacts should not just stop at the border of tourism. We know that that spills over into other agricultural, or other commodities.

Mr Muir: Thank you.

Professor Higham: Yeah.

Mr Muir: Could I round back to Mr Patterson, please?

Mr Patterson: I just wanted to specifically touch on cycle tourism because I've done quite a lot of work in that space. And specifically in my section 53 responses in paragraph 125, I looked at it in quite some detail. I gave some contextual information about what happens in terms of cycle tourism in Queenstown-Lakes, what happens along the Dunstan Cycle Trail. And as part of that, I actually looked into cycling activity over Thompson Gorge Road.

And I think given that Professor Higham talked of people making some sort of grand connection between the Otago Central Rail Trail and other parts of the cycling network. For one that's impractical, because cycle trials, when they're constructed are, to be the New Zealand Cycle Trail Standard, have to adhere to certain gradings and part of that is to do with how smooth the surface is, how wide it is. But gradients also play a role. So, to get mass market penetration you need to be a grade 1 or 2 cycle trail, because anyone can pilot a bike over that. The reality is the gradients on offer over Thompson Gorge, while wonderful for more experienced riders, they don't cater for the masses.

So looking through Strava data there was, for example, comparing two – and these are back country trails. The Coronet Loop with Thompson Gorge Road, the Coronet Loop had more than 15 times the usage. And even then the Coronet Loop has cycle trail counters on it, which the Thompson Gorge one doesn't. That was comparing Strava data set. The Coronet Loop had just under 4,000 uses a year. So if I applied those same relativities from the Strava data you would've got about 272 riders a year over Thompson Gorge. So yes, that is an extrapolation based on Strava data, but it's giving an idea of the order of magnitude of cycling that might potentially occur over Thompson Gorge.

Mr Muir: Yes, well there are live issues about gradient on the alternative proposed access across the range and what effect that might have cyclists. But your basic proposition is very low numbers?

Mr Patterson: Exactly, very low numbers.

Professor Higham: Could I respond please?

Mr Muir: Yes, but I can't have endless toing and froing because we are time limited. But yes.

Professor Higham: Well I can be very brief. In terms of the first question, I don't have any specific evidence on post-visit consumption of tourism, of New Zealand goods and services. But anecdotally I know lots of people who have visited New Zealand and ended up supporting New Zealand businesses. I know people who have ended up migrating to New Zealand because of gap year experiences in New Zealand when they were university graduates elsewhere in the world. So I mean

I have absolutely no doubts about the value of post-visit consumption by people who have had outstanding experiences in New Zealand.

In terms of Mr Patterson's comments, it just feels like grasping at straws to me. I just see absolutely no grounds for comparison between the Coronet Loop, which is a recently opened trail, and the road across Thompsons Gorge that is not yet formally a cycle trail. In terms of gradient cycling trails - - -

Mr Muir: But there is an existing cycle trail. It's called Thompsons Gorge Road.

Professor Higham: It's a road, yeah, but it's not a formal part of the cycle trail network. It's an option for cyclists who choose to go over there. I've cycled both Coronet Loop, which is an established trail and it's outstanding, and Thompsons Gorge which offers a challenging but an outstanding cycle experience, but one that is not yet part of the cycle network. And I believe that if it was to become part of the cycle network, with a carefully graded accessible cycle trail, a connector between those valleys, it would soon show the sorts of visitor numbers that the Coronet Loop has enjoyed, as referred to by Mr Patterson. I just don't see the comparison.

Mr Muir: Right, thank you. Is there anything, Mr Patterson, you wanted to respond to in that?

Mr Patterson: No.

Mr Muir: Right, are there any questions from the Panel in relation to Professor Higham's evidence?

Ms Sweetman: [inaudible]

Mr Muir: Sorry, yes. Dr Lees?

Ms Sweetman: [inaudible]

Mr Muir: Oh sorry – sorry, Dr Meade.

Dr Meade: Thank you sir. Please can I just flag by the way I have a quick and easy answer to Mr Barry's earlier question that I can come back to when appropriate.

But just in terms of a brief remark on the tourism questions. Just in terms of the comparisons with Hunter Valley, if you're in a situation where you have 41 mines in a region already, and you add the 42nd mine, you'd probably expect a marginal impact of that 42nd mine to be rather limited in terms of the impact on attributes of other activities in the region, such as tourism or wineries, and so forth.

But if you're in the region where you have zero mines already and you move to one mine, you'd expect the marginal impact to be relatively greater. So, I'd just suggest that as a potential rationale to add support to what Professor Higham's saying.

Mr Muir: Yes, thank you. Right, is there any questions, further questions from the Panel in relation to this topic? No. Any cross-examination relating to

Professor Higham's evidence? No. Very good. Thank you very much Professor Higham for making yourself available from somewhere in Europe at the moment. We appreciate it.

Professor Higham: I am in Zhuhai in China.

Mr Muir: Oh you're in China, very good.

Professor Higham: I've switched the aircon off so that you could hear me, and now I'm slowly cooking.

Mr Muir: It's probably what about 32 degrees or something out there and about 90 per cent humidity.

Professor Higham: Exactly.

Mr Muir: Yes, very good. Well thank you again Professor Higham for joining us from China and you are excused if you have, as I'm sure you do, better things to do this afternoon, or this morning, or whatever it is in China. Thank you again. And we're now going to take a short break and it seems that we have two topics to cover before ideally 5 o'clock.

Ms Sweetman: I still have a question.

Mr Muir: Ooh I'm sorry.

Ms Sweetman: No it's not on tourism. We'll come back to it after.

Mr Muir: Yes, very good.

Mr Barry: And we can maybe hear Mr Meade's response to my question after.

Mr Muir: Yes.

Afternoon adjournment

TOPIC 3: ASSESSING MARKET AND NON MARKET (ADVERSE) IMPACTS (CONTINUED)

Ms Sweetman: Just before we totally close off topic 3 on market and non-market (adverse) impacts and how they're assessed, was I understanding you correctly Dr Kaye-Blake that you were saying that we should have an economic assessment in front of us of the non-market adverse impacts?

Dr Kaye-Blake: Yes, we should have an economic assessment of the non-market impacts.

Ms Sweetman: Are you aware of any such assessment ever having been done for the type of application that we are dealing with at the moment, where there are adverse impacts on ecology, landscape, cultural values, heritage?

Dr Kaye-Blake: Yes. So, we, in the Trans-Tasman Mining case, I think in the RMA case, there was evaluation of adverse impacts. I don't know what happened with the Fast-Track application. I didn't follow it. With the Blue Endeavour application by New Zealand King Salmon, I produced a cost benefit analysis that included economic, social and environmental impacts, including taking quantification from other experts, such as [inaudible] impacts and so on, and recreational impacts, and applying them, applying valuation to the impacts that they had stated.

Ms Sweetman: Did that cover all the impacts?

Dr Kaye-Blake: It covered all of the impacts that other experts had identified that were not less than minor.

Ms Sweetman: Right, and you put a monetary figure - - -

Dr Kaye-Blake: Yes.

Ms Sweetman: - - - on that? Was that accepted by the Hearings Panel or the Court?

Dr Kaye-Blake: Yes. Yeah, it was accepted and I think that the resolution was that King Salmon got permission for some of their farm sites, but not all of them.

Ms Sweetman: Oh right, so that's the "The King Salmon"?

Dr Kaye-Blake: The King Salmon Blue Endeavour, yeah.

Mr Muir: You were called by an opponent on the application?

Dr Kaye-Blake: No I was called by King Salmon.

Mr Muir: King Salmon.

Dr Kaye-Blake: And I developed a cost benefit analysis that had – that took the financials from the company, did an economic analysis and then took the impacts from other experts and did the non-market valuation. Those are two examples I can give you. I know that there have been other cases where they had a social impact assessor and I've worked alongside them, but I don't recall that dollars came into it.

Ms Sweetman: So the Trans-Tasman Resources is not a RMA matter, I do believe I'm right there. That's a EEZ, Environment Exclusive Zone matter.

Dr Kaye-Blake: Right, okay.

Ms Sweetman: And of course that's been refused both through the Supreme Court, I believe, and withdrawn through Fast-Track.

Dr Kaye-Blake: And the negative impacts were part of the reason it lost in the first instance, because the opponents put a high value on their experience of the [inaudible] in the bay and the beach. So that was part of what the non-market impacts, the value of that, as testified by the opponents, was one of the reasons that it failed.

Ms Sweetman: Ms Gepp did you want to say something?

Ms Gepp: I just have a clarification. Yes, Dr Kaye-Blake may not know what "that King Salmon" means. So it wasn't that King Salmon.

Dr Kaye-Blake: Oh sorry.

Ms Gepp: It was the resource consent application for if the open ocean, so the Cook Strait Salmon Farm, because I was counsel and Dr Kaye-Blake was my witness. So, that was what that one was. It was the resource consent decision.

Ms Sweetman: Okay, that was subsequent.

Ms Gepp: Yes.

Ms Sweetman: Right, thank you.

Mr Muir: Is there any other expert that wished to contribute to that discussion.

Ms Hampson: If I can just add that as far as I'm aware, I know that the Waihi-North - - -

Mr Muir: This is Ms Hampson for the record.

Ms Hampson: Yes.

Mr Muir: Yes.

Ms Hampson: The Waihi-North hearing, I know the economist there was asked to value the loss of forest, and he was able to put a monetary value on native forestry, native forest land. So that was one example. I'm not sure how it was used in the decision. I just remember reading his evidence.

Another example, I have been asked, for the Pound Road Industrial Fast-Track application, the Panel had asked the applicant to go back and consider impacts no a particular intersection. They were trying to decide about staging the development and what impact that would have on congestion, and the applicant asked me to use the NZTA non-monetary, oh the monetised values to put a cost on congestion and safety. So accidents.

So they are examples where it's been helpful.

Ms Sweetman: On components.

Ms Hampson: On components and where perhaps requested.

Mr Muir: And from some distance away from monetising the value of a spring annual, for example?

Ms Hampson: Yes. I haven't seen that done yet.

Dr Meade: Sir, if I could add, in the Bream Bay sand-mining application, excuse me, the economists for the applicant used non-monetary values to assess the value of improved road safety, for example, with fewer truck movements.

Mr Muir: Right. For the record that was Dr Meade. Thank you.

Ms Sweetman: So again Dr Meade, you'd say components may be appropriate?

Dr Meade: My general position, and it's recorded in the joint witness statement, is that I think we should try and monetise these things where we reliably can. Where we reliably can't, then that's where we need to think about other ways to try and assess what the relevant impacts are.

Ms Sweetman: So I's just like to tease this out, and I apologise to my colleagues.

Mr Muir: Not at all. A very central issue.

Ms Sweetman: Where is it that it's not appropriate to be able to do, or credible to be able to monetise non-market impacts?

Dr Meade: I think it does come down to specific circumstances. And so effectively if we have decent benchmarks for the matter in question, then we can use those. If we don't have decent benchmarks, then obviously we can't. I've had it suggested to me that there might be things like a plan violation on a project is something that might be hard to put a non-monetary impact on. So what's the non-monetary cost of a plan violation, for example? And I think, as an economists, we'd have to think deeper about well what does a plan violation mean in substantive terms? Then we'd try and answer the question about how you'd try and monetise that. But it's quite plausible that we could think of situations where we don't have decent benchmarks or there are things that are, you know, so novel that we don't really have anything yet that would help us to get to a solid answer. So that's where we'd be deferring and saying, "Look this is a matter that we can't really credibly put a monetary figure on".

Ms Sweetman: Thank you. Dr Lees.

Dr Lees: From a practical perspective, I found it difficult at times when it comes to cultural values. So it can be the case that I've found economic, social, environmental values easier to think about non-market or market values. Cultural values is more difficult, because I also believe it goes to sort of standing in the CBA. So how do you think about different groups that may or may not be affected.

Ms Hampson: And I'd just add, in the Taranaki case there was quite a bit of discussion around trying to value cultural effects, and the feedback that we had from local iwi is that that would be inappropriate to try and put a money value on what was significant cultural and heritage values for them. So there's time when it's not appropriate.

Dr Meade: And if I could perhaps add to that, I agree. But I am actually involved in two Fast-Track processes on behalf of iwi or hapū applicants where I have done assessments of the cultural value impacts, and that was with, you know, for a client who was the iwi or hapū.

Dr Kaye-Blake: I would also add that there is work that values heritage value. So if we set aside values, cultural values we were talking about Māori cultural values. We set those to one side. There is work that's been done on cultural values in terms of things like ruins, huts, heritage sites, historical sites. So those can – I would put those inside the list of things that we can do.

Mr Muir: Mr Patterson.

Mr Patterson: I'm good for now.

Mr Muir: Good for now. Right, okay. Ms Vella I do - - -

Ms Vella: Sorry sir, I just don't think we had the opportunity to cross-examine on this topic.

Mr Muir: Yes, I'm trying to work out you're now cross-examining on a footnote.

Ms Vella: Well I'm not sure that we had the opportunity to cross-examine on this topic before we switched to Mr Higham.

Mr Muir: I see.

Ms Vella: I just have one very brief question.

Mr Muir: Of course.

CROSS EXAMINATION BY MS VELLA:

Ms Vella: And it goes back, Mr Patterson, to trying to scroll back through Mr Higham's comments now. But it goes back to a question raised by Commissioner Sweetman to Dr Kaye-Blake around – Dr Kaye-Blake was talking about effects on, or perhaps it was you, I'm sorry I can't remember, but health services, roads, et cetera, in the local kind of area. And Commissioner Sweetman said, are these the type of things that are normally covered off in a social impact assessment? And I think it was Dr Kaye-Blake that said some things could be.

So my question to you is just are you aware of the social impact assessment that was done by the applicant?

Mr Patterson: I believe it was me that said some could be, and no I'm not aware of it.

Mr Muir: Thank you. Right. Before we move onto the next topic, we need to deal with Dr Meade's response to the outstanding inquiry.

Dr Meade: Thank you sir. So I can be very brief. So Mr Barry, I went and checked how I did my calculations and when we're moving from the 122.7 to the 24.4, the 122.7 I calculate is EBITDA, minus corporate tax, minus other tax. But for the 24.4 it's EBITDA less 60 per cent. Then I subtract the same corporate tax, and the same other tax as before. So I haven't pro-rated those down. That's why we get this bigger than 60 per cent decline moving from the second bar to the third. And that is, you see the top bar, the 53.9 the blue bar in both cases is exactly the same right. So the corporate taxes and the other taxes is exactly the same in both of those two bars.

Mr Barry: That's right. So I'm still a little bit puzzled, Dr Meade, because the 12.8 doesn't change and the 33.8 doesn't change, but the 122.7 goes down by about 80 per cent, I think it is.

Dr Meade: Yes, that's because we've got the leverage effect sir. So the corporate taxes and the other taxes are being deducted at the same level in both the second stack bars, and the third stack bars. I'm only reducing the EBITDA by 60 per cent. So that's what causes the leverage effect. You get a bigger than 60 per cent deduction because the taxes aren't going down by the same proportion of reduction as EBITDA is going down by. So there is a financial leverage effect but we're using taxes as the financial leverage effect.

Mr Barry: Yes, just in principle I'm just trying to understand how it works in practise here.

Dr Meade: I can send the actual numbers if that was going to help. But like I say if I was reducing everything by the same factor then you'd expect everything to be reducing by 60 per cent overall. But I'm only reducing the EBITDA by 60 per cent and I'm subtracting a hundred per cent of the taxes and so I move into the third column.

Mr Barry: But the taxes are below the 122.7, that's what puzzling me, Mr Meade, and they don't change.

Dr Meade: I'm subtracting the same big number from both the second and the third columns. That's the thing. So I'm reducing my EBITDA by moving to the third column, and I'm subtracting the same big chunk of tax, 53.9 in either case.

Mr Barry: Are the numbers in your – annexed to your evidence?

Dr Meade: Well they are as hard numbers, that's right. Yes. But as I say, the essential point is the calculation. I'm not pro-rating everything by the shareholding percentage. I'm only pro-rating the EBITDA by that and I'm subtracting the same big number in that post-tax capital contribution to GDP, and subtracting the same big tax number in either of those second and third columns.

Mr Barry: I'll have a look at the annex. If I've got any further questions I think I can get back to you.

Dr Meade: I'm happy to answer any further questions if it's helpful.

Mr Muir: Mr Patterson, you didn't have any comment on that?

Mr Patterson: No I haven't specifically looked at that in a while.

TOPIC 4: ADDRESSING OTHER KEY RISKS/UNCERTAINTIES

Mr Muir: Right. Thank you. Right, the next topic and I suspect that we might have covered this, at least in part. But we'll just round back to it, is addressing other key uncertainties and risks. What we had identified on the Board was labour sourcing, housing and direct effect on other industries. Certainly we've touched these points during the day. Do we regard the issue as having been satisfactorily addressed? Or is there more to be said? Well perhaps I'll just start with Mr Patterson.

Mr Patterson: Sir, I'm just looking out the corner of my eye. From my perspective, I believe I've talked about labour sourcing and housing in sufficient detail

Mr Muir: Yes.

Mr Patterson: Direct effects on other industries, specifically we've talked about tourism. I have also talked about wine and - - -

Mr Muir: Tourism and viticulture.

Mr Patterson: Yeah, and viticulture. There's not really more specifics that I'd say on viticulture, at this stage. They were, yeah, they were canvassed to an extent already.

Mr Muir: Right, Dr Meade.

Dr Meade: Thank you sir. So for me really it's just the catastrophic risk question that was addressed at the very end of the joint witness statement, that I would like to cover off in this particular section if I may?

So this is where, if we think about what's the expected possible liability to the taxpayer in the future if things don't go well? And that's the question that I'm asking because we know from other mining examples in New Zealand that sometimes happens, and the costs of mine clean up get socialised to taxpayers. And this is not necessarily in a hundred years time. It could be in five years time.

And the reason I say that is that whether or not we end up with the tailings of this mine safely contained in perpetuity reflects a number of factors. One, is technical matters such as seismic risks and I agree with Dr Kaye-Blake's formulation before where we definitely want engineers and seismologists and so forth to be weighing in on things like that.

But there are also institutional questions that are very much down to firm behaviour and firm choices, which is where the economists definitely weigh in, and this is where the limited liability structure of the firm is particularly pertinent, because it's plausible to imagine scenarios, such as the gold price declining unexpectedly, the costs of mining rising unexpectedly, or the costs of containing the tailings rising unexpectedly, for example, if there should be unanticipated kind of earthquake for example that means that the engineering has to be up-spec'd.

All these raise the question about how would the owner of the mine respond if any of these eventualities materialised? And because of limited liability, the mining operator gets to enjoy all the upside of everything's going well, but they simply can walk away if everything is going badly. And there's an example of this in the contemporary error, I thank Dr Bertram for this example, there's the Tui Mine near Te Aroha, where the operator went bankrupt in the 1970s. There are uncontained toxic tailings that needed to be contained and ultimately the taxpayer underwrote most of the cost of having to contain those and it added up to about $30 million I think in current dollar terms.

And we've got other examples of tailing storage facilities being undermined by heavy rains, for example, in Coromandel. So this was the gold – I don't know if I can find out what the example was – it was in my report. I mentioned another – the Gold Trust mine, the Gold Trust mine in Waihi, yeah. So this happened in 1998 I believe it was. Yeah, so with heavy rains the tailing storage facility was undermined and the operator in that case did spend an extra $30 million at the time, which is roughly $60 million in current terms, to stabilise the tailing storage facility.

So this is not just a hypothetical risk, and I'd just like to circle back briefly as well, sir, to comments made earlier about the ability of seismologists and so forth to assess the relevant risks. I agree we can assess the relevant risks, because by definition risks are things for which we know the probabilities of various events. That's how we tend to define risk. But economists are careful to distinguish risks - - -

Mr Muir: We define risk as a combination of probability and consequence.

Dr Meade: Mechanically, indeed sir. Mechanically that's true, but as economists we actually distinguish the way we calculate our probabilities. In a risk situation we can put those probabilities on because we know what the right distributions are. In an uncertain situation, we don't know what the probabilities are, and that's the problem. There are situations where unexpected events can happen, we don't know in advance what the probabilities of those events are. All we know is they can happen and it's very hard therefore to come up with a fixed number and say, "therefore the expected cost is whatever".

And so it's quite pertinent to inquire as to if the tailing storage facility were not to be completed properly, or were to be undermined and not repaired properly, that reflects not just technical questions, like seismic risk, it also reflects seismic uncertainty, and the example I provided in my report was the Statistics New Zealand – Statistics House in Wellington.

I'm giving you this presentation by blind luck. I used to work in Statistics House in Wellington, built in 2005. When the Kaikoura Quake happened it failed catastrophically and floors decoupled and sandwiched downwards. A bit like the

CTV Building in Christchurch, and it was because the engineers hadn't anticipated an earthquake like the Kaikoura Quake. It was a bit different to what they'd already known. So they used their assessment of risk, with the probabilities that they did know to design Statistics House, and at the time it was considered to be very highly rated for earthquake strength, but in the event, only about 10 years later, it failed catastrophically precisely because an uncertainty arose. Something happened that we didn't see coming. A black swan event, if you like, and that wasn't included in the engineers' calculations.

And this is precisely the sort of scenario that we have to allow for here. So if we build the tailing storage facility that's meant to be safely containing toxic tailings in perpetuity, that may or may not actually happen, reflecting either seismic issues, because we have an unanticipated kind of seismic event, for example, or it happens for human choices, because the gold price fell, or the costs of building the tailings storage facility rose dramatically, and the mine operator simply says, "I'll exercise my option under limited liability to not do so", which then begs the question who pays? And, of course, it generally comes down to the taxpayer, which is how this has operated in other mining tailing storage facilities that have not been completed adequately and the taxpayer has to underwrite it.

How might we get a handle on this, and actually Dr Bertram pointed to this, I think, quite aptly before. And I think when he said we could do, if you like, a bit of a break even analysis. So we try and figure out where the tipping point is. And I'd mention that I think that - - -

Mr Muir: Would the inevitable starting point be with the very extensive evidence that we have received from the geotechnical experts, we spent an entire day on it yesterday, and I think the Panel has a reasonably clear view emerging from what is essentially a consensus of, on the part of the geotechnical experts, about some aspects of TSF stability at least. So you'd have to start your analysis by saying, anything is conceivably possible, but what is the likelihood of what you call catastrophic failure? And then you would feed it into a model wouldn't you? Rather than constructing an entire model around what you call a black swan event?

Dr Meade: In fact in my joint witness statement comments I put it the other way around. I said, because we can't assign the probability correctly, because there are unanticipated events that we can't anticipate. This is precisely the point. If you can't anticipate an event, you can't put a probability on it. But what you can do, is you can work out what Dr Kaye-Blake referred to, which is the consequences of an adverse event.

So if we had a tailing storage facility that was undermined or failing, or hadn't been completed, we could work out, for example, what would it cost to complete it to safely store the tailings, or we could imagine what the consequences would be if there was a failure and we had, you know, the toxic waste leaking into waterways and so forth. You can work out what those costs are and work backwards to what the expected cost would be, by calculating the probability of this uncertain event as the residual. That's the last thing you calculate. We don't know what that probability is, but we can figure out what the cost of the bag thing is. And then by figuring out what is the probability that makes the expected costs equal to the project's benefits? That is your break even probability, and then you can form a view.

If they were big numbers, let suppose it was 100 per cent, the only way you could make the project benefits tip negative, was to have 100 per cent probability of a catastrophic failure. The Panel may rightly conclude that seems very implausible. We don't accept that it is 100 per cent probability that it will happen. But if the break even probability was point one per cent, for example, so you only needed a point one per cent event for major costs being imposed on the taxpayers or the community, or anybody else, for the project's net benefits to become negative, then that would be a different story. The Panel might say, actually a point one per cent probability is actually quite plausible, and on that basis we're happy that the adverse impacts are disproportionate.

So I think this approach actually assists the Panel in doing a disproportionality assessment under section 85(3) to help you figure out what that break even - - -

Mr Muir: It certainly couldn't be looked at in isolation from bonding requirements, and why would we not take, ultimately take advice from bonding experts on their assessment, having looked at the geotechnical information of the likelihood of catastrophic failure to the extent that it should then be provided for? Why should we take the view of economists on this?

Dr Meade: There are two reasons sir. So one, the bonding arrangements, as I read the bonding arrangements, they relate to things other than monitoring, maintaining or repairing the tailing storage facility. So if there was, for example, an unanticipated type of event, such as an earthquake or a heavy flooding event, which do cause tailing storage facilities to fail, then we haven't accounted for those things in this bonding arrangement, because they haven't been even considered for it?

And then if they were, I return to my earlier point, we can only assess these things based on the risk that we know. We can't assess these things based on the risk that we don't know. But all we know is that there are unanticipated events that can happen, and they do happen, because in our lifetimes they have happened. I'm here before you today because I wasn't in Statistics House at the time it fell apart. I could've been in that building when it did fall apart, and that building was built to great earthquake standards based on the best knowledge that the engineers had of seismic risks. But that knowledge turned out to be faulty.

And so that is precisely the problem we face here. Not only is the bonding arrangement not covering the monitoring, maintenance, or repair of the tailing storage facility. It also has a cap involved on it, this $50 million cap. So if it turns out it's a hundred million dollars that's needed to you know maintain the toxic tailings safely forever, then that bonding arrangement obviously only covers part of that risk, and the rest is left uncovered.

So I agree that the bonding arrangements are a partial solution, but they don't cover all pertinent eventualities, and they're capped anyways, and they arise in the context of limited liability, which is where the company gets to make decisions about what it will or won't do to safely store the toxic tailings. And this is not just a purely technical question that scientists can answer. This is something to do with firm behaviour, and this is definitely the economists' domain.

Mr Muir: You seem to assume, in this case, that every regulator, every report on an annualised basis or even more frequently than that, that is provided for, or will be provided for in all of the management plans, doesn't exist. And it's, you know, the regulators, that everyone is hands off for 13 years and then, or 10 years, or whenever the company goes bankrupt on your calculations, then he walks away. Whereas every step of the process is being subject to oversight and performance criteria, and trigger points, and implications and it's not like the TSF is all going to be constructed on day one. It's going to be increased in height as the processes move on through a 12 year mining project.

Dr Meade: With respect sir, that's not my characterisation at all. Even with an incremental construction of the tailing storage facility, even with on-going oversight, for example, the three yearly plans that are proposed, right. The nine NPCs I think they're called. So these things are done periodically. But here's a scenario. So at some point we do another update, we say to the company, "Okay we've had a new seismic event that means that the engineering of the TSF has to be enhanced. That's going to require a further X million dollars to be put into the bond arrangements" the company has a choice whether or not to do so. They'll do so if they think it's better to keep trading or not. If the gold price has gone down, and/or the costs of mining have gone up, they could simply say, "Well we see your number but we're just not going to pay it. We're going to just bankrupt the company and you'll have to look after the rest".

So the fact that the TSF is being built as the process continues, actually is part of my concern, because it's not like we have a solid TSF from day one, that we can say is going to be in place irrespective of the choices that the applicant makes, or irrespective of what happens seismically, or whatever. Rather this is something that's going to evolve, and it will evolve subject to decisions made by the company itself and in the adverse scenarios, that's when the company walks away, and it's in those scenarios that the taxpayer has to step in.

Mr Muir: Right, I think we've got the point.

Ms Sweetman: Dr Meade where did you get the figure that the bond maximum was $50 million?

Dr Meade: That was in Mr Stone's – sorry who is the CEO of – there was a recent RFI response, came through about two or three days ago.

Ms Sweetman: So my understanding of Mr Springs' response - - -

Dr Meade: Spring, sorry.

Ms Sweetman: - - - was that $50 million was for a new Trust, rather than - - -

Dr Meade: Yes.

Ms Sweetman: - - - bond.

Dr Meade: Oh beg your pardon.

Ms Sweetman: So two separate.

Dr Meade: I accept that may be true, indeed.

Ms Sweetman: Just wait would you until Commissioner Sweetman has completed her question.

Dr Meade: Apologies.

Ms Sweetman: Just trying to understand. My understanding is they are quite separate things and maybe Mr Patterson are you able to address that for us?

Mr Patterson: I can't in great detail other than it's my understanding that the Trust is post the closure process and that, you know, you'd have the bond up until that process – up until that point in place.

Mr Muir: The bond goes in place on day one of construction, and it is progressively increased as risk and cost magnifies over the course of the project, does it not?

Mr Patterson: I'm not a bonding expert but that's my general understanding of the process.

Dr Meade: And so my response is, that's fine as long as the mining operator wants to continue operating the mine. As soon as they choose not to, that process ends up with a sudden crash.

Ms Sweetman: So are you saying, Dr Meade, we'd need to ensure that any bond conditions were suitably robust so that it can't just be walked away from?

Dr Meade: I'm afraid I have a bleak conclusion, and I say this as a former investment banker, if I had a mining company asking me for advice about how to structure their affairs in New Zealand, I'd be saying, "Set up a limited liability subsidiary in New Zealand because if everything goes well, you take all the upside. If everything goes badly you can liquidate it and walk away. Keep whatever you've got and insulate yourself from further liability". And frankly you can't slate it home to the shareholders. That's what limited liability does. This is why I don't think these bond arrangements can work, because the limited liability just means it's impossible.

Mr Muir: I don't follow, I just don't follow that argument, I'm sorry. So you'll have to make it more persuasive. It sits outside the limited liability framework. It will be supported either by an insurance company, or more likely by a bank, which in terms of the bond yes I absolutely understand that – and we'd have to take – we take advice from bonding experts on this. But in its terms would protect against the very contingency you've identified. A company unable to fulfil its obligations, but which prior to that point, has put in place the contractual arrangements to respond to such an eventuality for which it has paid, and handsomely no doubt.

Dr Meade: Sir, if I could perhaps give an example. You know, if you're a professional advisor you carry professional indemnity insurance up to a certain level, obviously. And it's only available if you keep paying the premium. So if I choose to liquidate my business and don't pay my premium, then there's no insurance available. And if it should turn out that I took out a certain level of cover, but events transpired such that I needed much greater level of cover, if I don't have that extra insurance, then whoever's coming at me can't actually get that extra payment.

And this is the problem. That if the circumstances change in a way that makes it less viable for the operator to continue operating than it is to liquidate the company then they will, in which case who is paying – who is paying for the bond? Who's paying for the insurance? And if the level of bond has suddenly gone up because we've had an unexpected event, the operator can choose not to pay.

Mr Muir: Your opposition would then, would be met by a cash bond?

Dr Meade: Only if that's a sufficient cash bond, sir. This is my point about the level of premium. If it suddenly has to be - - -

Mr Muir: You don't need to repeat yourself, Dr Meade. We understand your fundamental point here that the bond would have to be responsive, and it would have to be adequate. We do understand that.

Dr Meade: And acceptable to the applicant – ah to the operator.

Mr Muir: Yes. Right. Could I round back please to Mr Patterson? Is there anything emerging from that discussion that you wish to respond to?

Mr Patterson: No, not specifically within the adequacy and robustness of the bonding system.

Mr Muir: Right. Have we generally closed – Dr Meade are you – you were invited to comment on this next topic, which is key risks and uncertainties beyond the labour sourcing and housing issues that we discussed earlier in the day. And you focused here on this issue of risk, which feeds to the adequacy of bonding. Is there anything else that you wanted to address in the context of key risks and uncertainties that we haven't already done?

Dr Meade: I think we've adequately addressed them earlier, sir.

Mr Muir: Right, thank you very much, Dr Meade.

Dr Bertram: Could I raise one, sir?

Mr Muir: Yes. Yes, of course, Dr Bertram.

Dr Bertram: This is on a slightly different front, but it does relate to something that was in the report I wrote, which I think is in the evidence. That is that the matter of ownership of the project. And this relates to the discussion that is being had about figure 9 in Dr Meade's evidence just a minute go, that you were concerned about why there was a massive change in the green bar with no change in the blue.

And the reason simply is that the same level of profitability was yielding the same amount of corporate tax. But because the after tax income was accruing only 40 per cent to New Zealand holders, rather than 100 per cent, there was quite a dramatic reduction in the green bar.

And it's a remarkable reduction. It's I guess a product of the discounting and timing and so on, in the numbers. But it doesn't address the issue of the sensitivity of our estimate of the quantum of benefit to the ownership of the company, as the proportion of overseas shareholding goes up or down. The amount of benefit coming in, in terms of the after-tax surplus to owners, moves quite a lot.

Now it is typically the case that in the development of a mine, and over the life of a mine, particularly where the initial developer is a [inaudible] explorer, which is the case here, rather this is not one of the big trans-nationals stepping in with a whole lot of experience and background in operating mines already in place. This is a company that's never before developed a mine. It's very similar in that respect to the original development of Macraes and Martha Hill when they first got going. The initial consenting and development of the project was undertaken by a relatively minor companies. But ownership transfers as the project goes forward and it does transfer from largely local to largely overseas ownership. I mean that's the logical direction, because the big trans-nationals are the ones with the deep pockets, the ability to actually, you know, get economies of scope and scale by taking the project over and running it more effectively.

And so, I will be very surprised if Santana, on its own, develops and runs this mine through the 16 years, or the projections we're looking at. My anticipation is that at quite an early stage, the prospect will arise of bringing in one of the trans-national majors to either do this as a joint-venture or take over totally, enabling Santana to sell out, to step out, with a payout to its shareholders and having seen the project through to a stage of profitability, capitalise on that and move aside, and leaving another company to carry it forward.

Now in that case, the little green bar in those projections in Dr Meade's numbers will be reduced by that fact that there will be fewer New Zealand shareholders actually receiving the benefit. So it goes right down. On the other hand, it could be off-set by the fact that there will be a cash payout at the time of sale into the pockets of those shareholders, so that there actually will be a one period boost in their take from the project.

And how that will wash out in the calculation of benefits going forward is interesting. I can't give you an answer to it. But I do think it's something that we need to bear in mind, that ownership typically does change over the life of a mine. Martha has changed hands twice. Waihi has changed hands twice, I think. So it's quite likely to happen. It is, you know, an uncertainty because we don't know how corporate strategy will evolve. But just bear it in mind.

Mr Muir: Yes.

QUESTIONS FROM THE PANEL:

Mr Barry: Thank you. We do bear it in mind and would it not be the case that normally in a reasonably competitive market, like the market for shares of Santana presumably is, that the seller would capture the present value of any future expected gains on a risk adjusted basis, i.e. they have the property right to the scarce resource, and that's what attractive to the buyers?

Dr Bertram: That point is correct but then I have to think about the circumstances which would trigger the sale. Not all circumstances that would very quickly eventually trigger the sale, would be a collapsed gold price, in which case the present value, and the capitalised value could drop quite sharply. We really don't know.

Mr Barry: That's the nature of the beast, isn't it? There's the land owner's already, has already captured some of that [inaudible] already haven't they?

Dr Bertram: Yeah, the Ardgour Station size, we've already taken that.

Mr Barry: Yes, a good example. Thank you.

Dr Bertram: [inaudible] possible to say that a lot of the benefits of this project have already accrued to New Zealand, in the sense that a lot of consultancy engineers, drilling subcontractors [inaudible] have already cashed in on this.

Mr Muir: Some would say, you know, everyone's had their – I won't use [inaudible] analogies. Right. Okay. Ms Gepp was there a cross-examination topic out of this?

Ms Gepp: Well sir I don't have cross-examination, but I would ask for leave to just address the Panel for a couple of minutes on this bond and Trust issue, and just sort of some of the uncertainties that Dr Meade and I have been grappling with in trying to understand how this long-term risk is managed? In the absence of being able to cross-examine the bond's experts and with Mr Patterson properly saying that's not his area, could I just address you on that issue briefly?

Mr Muir: Yes. So it's effectively a submission that we should be taking into account, in our assessment of adequacy of bond?

Ms Gepp: And in your consideration of the Trust endowment concept.

Mr Muir: Yes.

Ms Gepp: The two related [over speaking]

Mr Muir: Yes, well we are – there's probably more water to flow under the bridge with that, which is in its incipient stages.

Ms Gepp: Absolutely, and I think it's a function of not being clear to what extent there may be further opportunity to, for commenters to address you on those issues. The key point I just wanted to point out is that the most recent RFI response, RFI 7, provides that once the Trust is established and funds begin to settle into the trust account, the bond calculation would be expected to reduce accordingly, as part of the annual bond review.

Mr Muir: That was in response to I think a question that I personally drafted interrelationship - - -

Ms Gepp: So that's – that's right, the interrelationship.

Mr Muir: - - - between bond and Trust.

Ms Gepp: So the money in the trust starts to go up, the bond money starts to go down. We know that the Trust needs need to implement all of the as yet uncosted post-closure obligations, and yet the bond is going down.

Mr Muir: Well perhaps that's not quite right, is it, Ms Gepp to call it – all the post closure obligations. The post closure obligations would, at first instance, fall to the company and then the on-going perpetual maintenance of those obligations will fall to the Trust, correct?

Ms Gepp: I'm not sure if we know exactly when the transfer would, of obligations would come from – would go from MGL to the Trust. I didn't see that in the information.

Ms Sweetman: I think it's fair to say, Ms Gepp, obviously we've been quite busy for the last week or so. Since that information came in we've been able to have a quick review of it and we are expecting, as we know, updated conditions on Monday which I totally anticipate will be dealing with the Trust and bond matters. And I can imagine – but we'll see what comes back – but the issues that you are raising are ones that have crossed the mind of the Panel.

Ms Gepp: Thank you.

Ms Sweetman: And I was going to interrogate the planners about them a little tomorrow.

Ms Gepp: I can leave it at that, then.

Mr Muir: I think we are very live to this Ms Gepp. As to the interrelationship of the two, and to ensure that things do not fall between two stools to the extent that we can.

Ms Gepp: Thank you.

Ms Sweetman: And obviously adequacy of amounts - - -

Mr Muir: Yes.

Ms Sweetman: - - - flowing around as well. So, thrown around, not flowing around.

Ms Gepp: And I think that's just, that's why there's still, Dr Meade is still expressing his concern, because we're still in this situation of not being clear on that interrelationship. So I can leave it at that, thank you.

Mr Muir: Yes, and I think you'll just have to, just for the moment, you'll just have to leave it with the expertise on the Panel. The fact that we are live to this issue, and it may well result in further RFIs around this, as we drill down and it might also involve – it might also involve a working group on the bond, which is outside the processes that we're currently involved in. If we get to that point.

Ms Gepp: Yes.

Mr Muir: Yes, thank you that then brings us to the final topic - - -

Mr Leckie: Sorry sir, I have some questions.

Mr Muir: Oh Mr Leckie, I'm so sorry.

CROSS-EXAMINATION BY MR LECKIE:

Mr Leckie: I don't want to be left out.

Mr Muir: You've been such a good boy today.

Mr Leckie: Yeah, thank you sir. I appreciate that. Questions for Dr Meade, if you can hear me Dr Meade?

Dr Meade: I can, thank you.

Mr Leckie: I'll just orientate you to paragraphs in the joint witness statement. They're on the topic we've just been talking about. So starting at paragraph 76 of the joint witness statement.

Dr Meade: Yes.

Mr Leckie: In this paragraph you describe your view that the probability of certain events occurring ultimately reflects choices made by Santana and MGL. I'm paraphrasing, but that's correct isn't it? That's what you've written there.

Dr Meade: That's right.

Mr Leckie: And you've given an example of the TSF construction completion, quality, and use, correct?

Dr Meade: Mm-hm. Yes.

Mr Leckie: If we stick with the TSF as an example, surely probability of events in relation to those matters of completion, quality and use of the TSF is actually a matter that will sit with the Panel and the conditions of the approvals, if the Panel is minded to approve the project, wouldn't they? They wouldn't sit with MGL. They would – they would sit with what's listed in those conditions wouldn't they?

Dr Meade: If you forgive me, I did my PhD at a university that's ranked number one in the world for something called contract theory, and this is a university that thinks very much about the problems of parties being able to take hidden actions. So the Panel can certainly write whatever rules it feels that are appropriate and necessary. But whether or not those requirements are, in the event, complied with, that comes down to choices made by the firm, and choices made by the regulator in terms of monitoring and compliance, and so forth. So, we can't take it as read that just because we've written rule that that means it will be followed.

Mr Leckie: So your view there is making an assumption that MGL won't comply with the conditions, isn't it?

Dr Meade: Not that it won't but it might not. And it could choose not to if it suited it to do so.

Mr Leckie: Yeah, yes and you've made, and the second point you made there is an assumption that the relevant regulators won't enforce the conditions. That's the second assumption you made there.

Dr Meade: It's not that they won't. It's perhaps that they might not, or might not be able to do so adequately. And they face the same informational constraints that we all face, because if an uncertain events materialises, the regulators could've been doing a perfect job in monitoring compliance, but it turns out they were monitoring the wrong standard, effectively.

Mr Leckie: Thank you. And if we move over the page now, to the last page of the joint witness statement. So paragraph 78, yeah paragraph 78 where you list some [inaudible] motivating your concerns around as – and at 78(c) you list the Stockton Mine example. Have you got that in front of you?

Dr Meade: Yes.

Mr Leckie: In your brief of evidence your source for that example is a news room article.

Dr Meade: Correct.

Mr Leckie: Do you have any professional experience in relation to liability and bonding matters at the Stockton Mine?

Dr Meade: Not – no I don't.

Mr Leckie: Well I'll put to you, Mr Meade, but you won't be answer the question, that the particular liability you're talking about there is a Crown liability from historic mining. I assume you don't know anything about it.

Dr Meade: And I'll take your word for it.

Mr Leckie: Thank you. My last question, Dr Meade, is it's again in relation to bonding. And you've mentioned a few times today your concerns around limited liability companies. So I just wanted to put a proposition to you around that.

If a bond has been entered into by a limited liability company, and that limited liability company is ultimately liquidated and struck off, would you agree that the bond would still remain in place regardless of what's happened to the limited liability company?

Dr Meade: The bond itself, at whatever level it has been struck, that's right. But my concern is what happens if the level of that bond changes and there's no one to chase to try and get it to be increased.

Mr Leckie: Thank you Mr Meade, that's all.

Mr Muir: Any questions arising out of that? Thank you. Yes.

QUESTIONS ARISING FROM THE PANEL:

Mr Barry: One last question I might ask Dr Meade on this matter. Is there anything unique about the New Zealand environment, or even about the particular project that is being considered here, that makes anything unusual about the risks or the uncertainties here?

Dr Meade: Yes sir. To my mind the fact that we're building this in a very geologically unstable part of the world, right next to Lake Dunstan, where we ended up spending $1.5 billion extra to stabilise it because it turns out the cliffs weren't as stable we wanted them to be to stop a tsunami in the dam. This is a very – this is not a benign seismic environment, and we know from past seismic events in New Zealand, because we're a very, very shaky isle, right, that things happen that we hadn't anticipated. Because we have an understanding of what earthquakes do and don't happen. But then we discover knew information, such as just a week ago, for example, who knew we've got an active fault line beneath Auckland. We now have to revisit all of our earthquake standards for the buildings in Auckland because we've suddenly discovered a new fault line. This is exactly the sort of new information that could happen any time in the life of the mine or subsequently, and if we don't allow – we don't allow for the fact that there's stuff we can't anticipate, then we're going – we can run into problems, that we could find ourselves coming up short. Just like Statistics House came up short when it was tested by an unanticipated event.

Mr Barry: That sounds to me like a very general problem.

Dr Meade: A general problem [inaudible] New Zealand though.

Mr Barry: [over speaking] world that has earthquakes and we're not – and earthquakes are not the only risk or uncertainty that we have to live with.

Dr Meade: Heavy rainfall is the other, right, for tailing storage facility failures. So heavy rains or earthquakes, we are particularly shaky because we're built on a fault line. The Southern Alps are a fault line. You know, this is where we've got some particular issues just because of the geology of New Zealand.

Mr Barry: Thank you.

TOPIC 5: ASSESSMENT OF CONCLUSIONS RE THE REGIONAL AND NATIONAL SIGNIFICANT BENEFITS

What is the region?

Mr Muir: That brings us to the final topic, the assessment of conclusions re the regional and national significant benefits. And the sub-issue there, what is the region? Could we just deal with the sub-issue first? For the purposes of the Act's focus on regional or national benefits, what, Mr Patterson, is the applicant's position in relation to the relevant region?

Mr Patterson: Look, regarding the geographical frame in the analysis, I believe that the Inland Otago area is the most appropriate region for considering economic benefits. Inland Otago, which comprises, Queenstown-Lakes and Central Otago, has been acknowledged by Central Government as a relevant regional geography. So if we're to go back a few years MBIE's Regional Skills Leadership Group they departed from the norm, which was followed across New Zealand, that generally followed regions, as in Regional Council areas, and they chose to use Inland Otago as a sub-regional definition.

This has also been a definition that has been used in on-going regional deal negotiations between Central Government and that they've termed to be the Otago Central Lakes area, which is essentially, well which is Inland Otago.

I've already previously mentioned today that the 2023 Census showed a high degree of commuter flows in both directions between the two areas. It was also in the joint witness statement under paragraph 21, Dr Lees put forward a paper by MOTU that also identified this as a relevant geography.

So with this geographic frame in mind, you know, the benefits of you know for me, from commuting workers and procurement on businesses, that's likely to spread quite widely across Inland Otago. And so that's the relevant geography from a benefits perspective.

It was noted in the joint witness statement that there's likely to be more of a localisation of any potential impacts. It was suggested in that, that was potentially the Cromwell Basin. I went further in my comments there and said I actually believe it's, in many cases, much more localised in the Cromwell Basin, because that's quite a large area, and much more to do with the immediate vicinity surrounding the mine site. That's the only opening comments I'd make.

Mr Muir: Thank you, Dr Lees, or Ms Hampson, do you wish to contribute on this?

Dr Lees: No.

Ms Hampson: No, other than to say that I agree that Inland Otago was an appropriate region.

Mr Muir: Do any of the economists here have a different view?

Dr Meade: Yes sir.

Mr Muir: Yes.

Dr Kaye-Blake: Yeah. So I do take the point that the regional economy probably is the region, because you know that's what the language is telling us. But the economic geography is that the benefits will be more diffuse across the region and the country, while the costs are more concentrated. And although that does not sit inside the definition of regional impact, or national impact, I do think it's one of the considerations the Panel should have regard to.

The cost that we've been talking about, the market costs and the non-market costs are more likely to fall closer to the mine and be more concentrated in Tarras and in the Cromwell Basin. And it may be that you find that the regional benefits are positive. The net benefits are positive, and that the project should go ahead. But I think it should be recognised that that will be at the costs of higher impacts on the locality.

Mr Muir: So is this really an extension of the same argument which says if you speak to the owners of property very, very close to the mine they're even more impacted again, and we had various representatives at the Cromwell hearings that have said that they were unable to sell their properties, and similar observations. So it's just an extension of that argument.

Dr Kaye-Blake: Yes. I put them in a special class of the argument, but it's just simply that you have a distribution of impacts across a geography.

Mr Muir: Did any other of the economists have any contribution to make on that sub-issue?

Dr Meade: Yes sir, if I may do briefly?

Mr Muir: Yes, thank you.

Dr Meade: Thank you. Just in terms of the assessment of significance of benefits, I feel constrained to read section 3, and it talks about regional or national benefits. If we start talking about sub-regional benefits, I'm wondering why Parliament didn't say so, if they were going to be specific enough to say they want regional and national benefits. So, for example, if district level benefits are fine, then I would've expected Parliament to have said so.

But I contrast section 85(3) where it doesn't make any sort of geographical limitation to adverse impacts. They could be nationwide. They could be highly concentrated. So I agree with Dr Kaye-Blake's assessment, that we could have very concentrated disbenefits but quite dispersed benefits.

But just as I read the legislation, benefits are regional or national. They're not sub-regional, at least for the purposes of determining significance. Whereas for adverse impacts, we have – well I think the Panel has, I should say, under 85(3) much more flexibility to think about what the relevant unit of analysis is.

Mr Muir: It can't be the case that the regional benefits have to penetrate every nook and cranny of the region though, can it?

Dr Meade: Oh no, I wouldn't suggested that sir. No.

Ms Sweetman: Dr Meade, do you think this is ultimately a legal argument?

Dr Meade: Well I guess we have the difficulty that we don't have regional or national defined, and so it begs the question, what is regional? And of course we don't have significance defined either. And so clearly it will be the Panel is making decisions about what they think significance it means. But when it comes to what we understand regional to mean, my default is, we know what regional councils are. We talk about certain regions in New Zealand. And unless there was some specific guidance for us to be thinking about this otherwise in accordance with the requirements of the legislation, I would feel constrained to simply use the regional council boundaries for assessing significance of benefits at a regional level.

Ms Sweetman: Thank you, Dr Meade. Dr Lees.

Dr Lees: Yeah, I mean I take a different view if I think about the regional council boundaries. They're kind of either political boundaries or driven by water catchments. So as an economist, kind of bringing an economics lens to the table, certainly think that we can think about what a local labour market would look like and hence the map that I dropped into the joint witness statement. It's on page 8. And so that would support Mr Patterson's kind of view that it is a combination of Central Otago District, and the Queenstown-Lakes District that forms the relevant region.

If you look at that map, you may form the view that you've simply, you know, I've simply coloured in those two districts. But actually that map is based on the commuter flows at a suburb level. So essentially 2,000 you know odd suburbs, and thinking about how workers and firms within those suburbs interact. And so if you think about which suburbs are more connected, you end up with a picture that kind of shows that the local labour market is really those two districts put together.

Mr Muir: Right. Expanding the discussion now into essentially the conclusions of the economists about the regional or national significance of the benefits.

Conclusions re the Regional or national significance of benefits

Mr Muir: Mr Patterson.

Mr Patterson: Just if I can have one moment just to find which page I'm looking at of what report. Yeah so I guess for me, when we're considering the significance of benefits, you need a relevant comparator. So having suggested that the relevant comparator is the Inland Otago economy, if we're to consider the scale of this economic activity, from a GDP perspective, and I use a GDP perspective because we don't have gross national product at a regional setting, it's about 5.4 per cent. Comparing it against 2024 figures, it would be marginally lower. It's still around the five per cent mark, if we were to use 2025 figures. If we were to indulge a broader definition to look across Otago, it would fall to just below two per cent in terms of the overall size.

This is, you know, this is a very large impactful amount of additional economic activity within the local economy. So yeah that's what I would say from a regional perspective.

Look at a national level, yes it's a smaller amount as a portion of the total New Zealand economy, a much smaller amount. But if we were to look at kind of Fast-Track decisions that have been made to date, this would potentially be the biggest, if not one of the biggest, in terms of its potential I guess additional economic activity into the New Zealand economy.

And sorry I should've just said those figures I referred to when I was comparing against the existing Inland Otago economy, those were in the original report I wrote, in section 6.1.

Mr Muir: Thank you. Did Dr Lees or Ms Hampson wish to contribute to this? Yes, Dr Lees.

Dr Lees: Yeah, so I agree with Dr Meade's statement earlier, in that we have no set definition of what significant means in this context. So in my view, one definition of significant is it's important, it's noticeable and we can think about what that might mean to kind of size, or value, or impact on price for other economic features in this realm. And so I think we want to consider whether the economic impact is different from what we might see under the status quo.

If I look at the applicant, and I've made this point earlier in terms of their approach, it meets the test of the FTAA, and as I've said in my evidence earlier, you know, the quantum is over-stated. There are kind of three things that are important here. One is kind of discounting appropriately; second is the issue that relates to GNI and foreign ownership lens; and then we talked at some length about kind of multiplier estimates that relates to labour and opportunity costs. So while the approach is valid, you then want to down weight some of those estimates.

So I get to a point where not only are the regional benefits significant the national benefits are too. The costs are real, but from my reading of the Act they're weighted by the Panel under section 85(3) and you know they're not assessed by the applicant. But that absence is not a methodological failure of the application. It's simply that that weighting should occur elsewhere.

Mr Muir: Right. Ms Hampson?

Ms Hampson: I think in my evidence I determined that I thought that the project is significant in the regional context, and was not significant in a national context. And I haven't changed my views on that. Probably been – I've probably set myself quite a high threshold as to what would make the project nationally significant. And just thinking out loud it's always interested me that the Act is written – it says, "regional or national benefit".

Mr Muir: Yes, yes.

Ms Hampson: And I've often wondered what that might mean. And I think it's maybe, one interpretation is, that projects can be determined into two different groups. One where it might impact national markets like the energy sector, or it might relate to the national transport networks, or it might relate to port infrastructure that supports national shipping or international shipping. Those might be projects where you'd naturally think that the benefits are to more than just Central Government. It might just be that it effects all New Zealanders in some way. And that the regional, you know, and regional is it a bit easier to sort of grapple with.

So my view is that given the uncertainty around some of the tax and the royalty payments which are really the mainstay of the national impact, over and above the regional, and that that with I think general agreement it could vary from what's been proposed, and could vary year on year, that doesn't lead me to a national significance outcome. And I'm happy to be conservative on that. But I definitely think that this project, given the scale of the employment and the local expenditure, can – will be of note and significance in Inland Otago.

Ms Sweetman: How about within the Otago region, if we were to take the definition of region to be consistent with regions, as they're set out in legislation?

Ms Hampson: I think it would still meet that threshold. And as it happens a lot of the assessment that Mr Patterson has done has not been able to actually narrow in on the impacts specifically on Inland Otago, even though we agree now that that is the relevant region. I think it would meet the threshold if we were sticking to regional council boundaries as well.

Mr Muir: Dr Bertram do you have a view on this?

Dr Bertram: Yes. I think there's no doubt that the project is significant. That's why we're here. That's not the issue. The issue is whether the benefits are significant. And that's a very different question from my point of view. And I think it's very unfortunate that the way in which Mr Patterson has framed his analysis just now go backs to what he was doing in his original evidence, which is to take the GDP impact, which I think we all agree does not resemble the actual significance of this for New Zealanders because of the overseas ownership component. And then compare that with the Otago region to which that GDP measure has no relevance, because a great chunk of those accrues outside the region, which Dr Kaye-Blake has just pointed out.

And I think because the frame of reference is inappropriately done here, the Panel does genuinely have a quandary in assessing whether a significant benefit accrues. For the Otago region, it seems to me that the only benefit that has emerged from the discussion so far is the extent to which wages in the region are above the reservation wage when labour moves from its present occupation into operating this mine, or when the benefits, if any, of in-migration after you've netted out congestion and housing, and other problems, have played through.

To me it's not persuasive that net. There are obvious benefits flowing from this to the Otago region, but my point of view is very much to national rather than the regional, I have to say, and the word "or" is there in the Act. So stepping back, I think it is definitely the case that, as I said at the beginning, this looks to be a project which, for a number of years, will raise the level of income accruing to certain groups within the New Zealand economy. And that to the extent that labour is paid above its reservation wage, to the extent that local investors are getting something better than they will already be getting from their participation in an international market where rates of return have pretty well settled to competitive levels. To the extent that there are net gains available there, yes it's relevant to count that.

I do then think that you do have a difficult problem, once you've worked out what you think the anchor number is, of those monetary gains, there are very significant non-monetary impacts of this project, which I do not – which I think cannot be ignored and I, and I've already said, I think monetising them is quite a challenge.

Some are willing to embark on that. I'm nervous to embark on it. But I do think it is possible to, at least in your minds, frame up some set of judgements about the incommensurable values that are at stake here. And to the extent that, as an economist I can't help you with evaluating all the expert evidence you've had on the adverse non-monetary effects, I'm afraid it lands in your lap rather than mine. In other words I'm agnostic here.

Mr Muir: Yes thank you.

Mr Barry: Just a question on the – I might jump in here on the regional versus national split of the benefit. It's a general question. Should we apportion some share of the national benefits, like the tax and royalty revenue, to the region when considering the regional benefits? To the extent Otago is 13 per cent of the national population, should we treat that as part of the regional benefits?

Dr Bertram: Yes, I think that would be appropriate.

Mr Muir: You accept that it could potentially fund hospitals and do everything else that's necessary in Otago?

Dr Bertram: Yeah.

Mr Muir: Right, thank you. Dr Kaye-Blake?

Dr Kaye-Blake: So mostly I agree with what Dr Bertram's just said. I think he's laid it out very well. So I would just underline that I think the benefits have been over-stated. I think the cost have been under-stated and that takes us to a very different net benefit calculation. And then additionally just the risk assessment is incomplete, so we don't have a good picture of what could actually eventuate. But other than that, I think Dr Bertram's done an excellent job of discussing regional benefit.

Mr Muir: Dr Meade?

Dr Meade: Thank you sir. So I would start with just thinking about my $90 million per annum figure and noting it's $67 million under my alternative assumptions. Just focusing on $90 million per year, and I'd stress that I think we need to think about annualised payments if we're going to do comparisons with things like GDP, because GDP of course is an annual flow. And I actually agree with Mr Patterson that it's pertinent to compare the project's benefits against regional GDP. I would say not sub-regional GDP, not that I think he is claiming that.

But when I look at my $90 million per year, and I calculate that to be point five per cent of regional GDP, and that's even before we've allowed for all the possible impacts, so on a you know fairly generous sort of interpretation of what the annual net benefit is, [inaudible] point five per cent of annual GDP in the Otago region and only point zero two per cent of national GDP, which is effectively a rounding error. It's not something that I would treat as being material. And in terms of employment it's point three per cent of regional employment, and that's even ignoring opportunity costs. And of course it will much less than point three per cent of national employment.

When I think about significance, I ask myself the question would we really miss the project if it didn't happen? And if we talked about 300 odd jobs in an area that has chronically low unemployment, I'm not sure that 300 odd jobs extra is going to be making a very big difference to the Otago region. You can argue about the significance at a much more localised level. But as I say, I don't believe that section 3 allows us to look at a much more localised level. It talks about regions, or the nation. It doesn't talk about sub-regions or anything other than that.

Mr Muir: Sorry, can I just stop you. Your point five per cent is based on the territorial limits of the Otago Regional Council is that right?

Dr Meade: However the Otago region GDP figure is couched, and Mr Patterson might be a better place to confirm whether that's the regional council boundaries or not. But my assumption would that is the case.

Mr Muir: Right. Not the inland, not what he – he focused on the Inland Otago - - -

Dr Meade: Correct.

Mr Muir: - - - GDP, right.

Dr Meade: Yeah.

Mr Muir: Thank you. Sorry to have interrupted.

Mr Patterson: Excuse me, could I respond directly?

Mr Muir: Yes.

Mr Patterson: It's almost to clarify in that comparison. So I premised my test of regional significance saying that because we don't have a regional GNP figure available for the region, we only have GDP, I'm forced to make that comparison between the project and the baseline on a GDP basis. If I were to compare the project GNP against the regional GDP that would be a mischievous comparison of apples with oranges. So in my section 53 responses I spelt that out between paragraphs 35 and 37 in great detail. And I suspect from having listened to when that figure was suggested originally by Dr Meade that 90 odd million was essentially his GNP type estimate. Am I correct?

Dr Meade: That is correct, and I actually accept the point that I am doing a comparison that is not a perfect comparison. I'm just taking GDP as a commonly used metric of the scale of economic activity in a region, even though as you pointed out I'm trying focus in on what the local benefits are, and ideally would be comparing that with GNP for the region.

Dr Bertram: If I could just briefly respond to that point that Dr Patterson's been making?

Mr Muir: Yes.

Dr Bertram: The point about both GDP and GNP is that they measures [inaudible] at the national level not at the regional level. It's completely inappropriate to take the entire GDP or the entire GNP contribution of a project and attribute all of that to the region within which the project is located, except in the sole case where indeed all the relevant incomes, factors of production are located within the region otherwise it's an economically meaningless comparison. And I must say I'm sorry that Dr Patterson persists in trying to make this comparison. I just don't think [inaudible]

Mr Muir: Right. Mr Patterson.

Mr Patterson: Yeah I would like to respond quite directly to that. I have enormously extensive experience in regional GDP calculations. I formerly was Head of the Regions Team at Infometrics and we developed what is to do this day New Zealand's leading interface of regional GDP estimates that virtually every territorial authority in New Zealand has access to.

And in my section 53 responses I described at great detail Statistics New Zealand's own approaches to regional GDP and that I conformed with those. So that's under paragraph 31.

Dr Bertram: What Statistics New Zealand is doing there is working out the product arising within the region. It's not dealing [inaudible] of who receives the benefit of that production. And the issue here is benefit. It's not production per se.

Mr Muir: Any comment to that?

Mr Patterson: Just that I was talking specifically about GDP because it was just important to make sure that we understood that GDP was correctly calculated. Regards to GNP I'm just trying to find where it is. In my paragraph 40, I talked about that it wasn't possible to regionalise those GNP estimates that we came up with for the mine further, because you know we simply are not able to - - -

Mr Muir: I'm sure Dr Bertram agrees with that.

Mr Patterson: Yeah.

Mr Muir: Yes.

Mr Patterson: Yeah.

Mr Muir: Is there any cross-examination arising out of this final topic?

CROSS-EXAMINATION BY MS GEPP:

Ms Gepp: Yes sir. Mr Patterson have you been briefed by your counsel on how to interpret "regional"?

Mr Patterson: No I haven't.

Ms Gepp: Have you had a look for a definition in the Act?

Mr Patterson: I haven't seen one. But that's not uncommon in these types of things. Regions are often not defined in economic development.

Ms Gepp: So the Act says, the Fast-Track Act says that where a word is not defined, then the meaning in the – the definition in the Resource Management Act applies. Are you aware of the definition of "region" in the Resource Management Act?

Mr Patterson: No, I'm not.

Ms Gepp: Would you take it from me that it refers to the region of the – my computer's just frozen – but it refers to the region of the Regional Council as determined in accordance with the Local Government Act.

Mr Patterson: I don't have any further comment on that.

Ms Gepp: Thank you.

Mr Muir: Mr Patterson, on the basis that regional benefit was determined in accordance with the boundaries of the Otago Regional Council, would you still regard the benefits as significant?

Mr Patterson: Yes, I would and I also, in table 5 of my original report, I put forward comparative against both Inland Otago and Otago region because I'd suggested that I believed the right framing was Inland Otago but was open minded to the Panel choosing other interpretations.

Mr Muir: Any further cross-examination Ms Gepp? No. Any other questions? Any questions from the Panel? Any other issues? Now that we have got to the end of the formal agenda that any of the experts consider that we need to address before we close this session? I'm not going to go around. Just speak up if you think that there is any such issue.

Very good, then I close this part of the hearings process. I'd like to express my thanks, on behalf of the Panel, to all of the experts that we have had here today. Obviously highly experienced and very able in their profession, and I know from discussions with Panel members in the various breaks we've had today, that they have found the session extremely useful in refining our thinking about some of these issues. And with that, I close the session.

Ms Gepp: Sorry sir, can I just jump in first?

Mr Muir: Yes.

Ms Gepp: Did you want to come back to the potential for an attempt to get a range that is agreed?

Mr Muir: It's not my sense that we would have this figure agreed by 6.30 even. I would say look - - -

Mr Barry: Next week.

Mr Muir: - - - next week.

Mr Barry: 6.30 next week.

Mr Muir: No I don't think that we will revisit it, Ms Gepp. I am conscious of we've had a lot of long sitting days and we have a very big day tomorrow, and I just don't think that the cost benefit analysis would sustain it, is my own assessment. But if anyone had a contrary view on the Panel, I'd certainly - - -

Ms Sweetman: I would just add, Ms Gepp, obviously we've got a lot to synthesise and work through and discuss about what next steps are and will advise parties in due course.

Ms Gepp: Thank you.

Mr Muir: So it's perfectly open to us, if we think that that would be a useful exercise, to essentially ask that the experts reconvene for a brief session to see whether they were capable of doing so, and advising it to us. Because unless it is an agreed figure it's not much use us having a long argument this evening about parameters between 67 and presumably north of 200 million. Would that be the other end of the – on an annualised basis? That would be, you know, I think that what we've seen is Dr Bertram trying us to bring us together at around the 100ish million mark. That's not likely within the next half hour, is it? No. Okay, right. Thank you. Sometimes monosyllabic answers are just what people need.

Very good, on that basis, I conclude the hearing.

Hearing concluded