



Environmental
Protection Authority
Te Mana Rauhi Taiao

TRANSCRIPT OF PROCEEDINGS

**ENVIRONMENTAL PROTECTION AUTHORITY
HEARING**

**Trans-Tasman Resources Limited
Marine Consent Application**

**HEARING at
MARIST-ST PATS RUGBY CLUB, HATAITAI, WELLINGTON
on 15 April 2014**

DECISION-MAKING COMMITTEE:

Greg Hill (Chairperson)
Gillian Wratt (Committee Member)
Brett Rogers (Committee Member)
William Kapea (Committee Member)
Stephen Christensen (Committee Member)

[9.00 am]

CHAIRPERSON: I just want to float something today. Just for this afternoon,
and again, what I am trying to avoid is a repeat of yesterday of going
5 too late, but the first part of that is not about that. Mr Venus and Mr
Witte are on this afternoon and what the DMC would like to do is
reverse the order of those and hear Mr Witte first because he has raised
some issues that certainly, we have questions to offer and then we
might be able to put some of those questions to Mr Venus.

10

MR BEATSON: That's fine. Having looked at the conditions that he has put
forward, that although he raises a lot of material in his written
summary, he doesn't seem to have many points of difference on the
conditions and he was talking about an earlier iteration of the
15 conditions.

We have reviewed what he has put forward and Mr Venus is going to
try and talk with Mr Witte as soon as he is available to see if we can
resolve those because we think we have got some room to move
20 towards him on those matters, so we are hopeful that between now and
the middle of the day, we might have a common ground on those
matters, and so I just put that out there as a comment. So I agree with
your suggestion, I think it makes sense in that order.

25 CHAIRPERSON: Okay, let's do that because Mr Witte has developed and
worked out the conditions as per the joint witness statement and Mr
Venus has taken a different approach?

30 MR BEATSON: Mr Venus has added those matters into his conditions as
well, it is just that he has reordered the condition. One of Mr Witte's
comments is that the order needed to be redeveloped, he's done that but
he has put those benthic monitoring references into the revised set of
conditions that he is putting forward.

35 So Mr Witte is commenting on an old set of conditions, not the latest
set of TTR's conditions.

40 CHAIRPERSON: We will deal with that this afternoon. The other issue I just
want to raise, if we were running late could we then hold Mr Venus
over until Wednesday afternoon, because Wednesday afternoon's off,
we haven't got anybody. If that is an issue – I just want to put – Ms de
Wit - -

45 MS DE WIT: I won't be here.

CHAIRPERSON: Right, you have got a cross-examine notice of Mr Venus, so you won't be here tomorrow, what is your cross-examination, how extensive is that?

5 MS DE WIT: **(INDISTINCT 2.31)**.

CHAIRPERSON: We will deal with that later on, because I think from – all the witnesses are important, Mr Witte and certainly Mr Venus are quite critical witnesses in terms of, certainly potential suggested conditions.
10 You can see what I don't want to do is end up through at 6 o'clock at night like we did yesterday, going through detailed stuff.

MR BEATSON: Could I just – I think we look like we have got enough time today to get through the witnesses that are scheduled.

15

CHAIRPERSON: That is what I am thinking, I am, it is just a contingency in case, so we will deal with that at lunchtime and see where we are at. Thank you. Mr Beatson.

20 MR RENNIE: The first witness is Mr Schouten, it is a video conference. So just while we are waiting for that to come up, I wonder if I might not mention a very brief matter yesterday, the committee expressed interest in whether there was a leasehold or land cost involved and we have obtained the information which is essentially that for land-based
25 mining, the royalty charged is one half of the royalty charge by the government for sea based mining which reflects the provision of the seabed as it were, and I am just not sure in what manner you would like to receive that information.

30

[9.05 am]

MR CHRISTENSEN: Can you say that again, Mr Rennie?

35 MR RENNIE: The land-based royalty for mining from the Crown is one half of the sea based royalty which reflects the fact that you separately acquire your land if you are onshore, but the sea comes with it.

MR CHRISTENSEN: Okay.

40 MR RENNIE: I am just asking how you would like to receive that, I mean, we could have a sworn affidavit from TTR or a certificate from Crown Minerals or whatever you would like to have.

MR CHRISTENSEN: I would be happy to just receive that in submissions.

45

MR RENNIE: That's fine, we will do that, thank you.

Good morning Mr Schouten, can you hear me?

MR SCHOUTEN: Yes, I can hear you nice and clear.

5

MR RENNIE: Yes, we can hear you very well, thank you, and my name is Hugh Rennie and I am one of the counsel for TTR. Do you have your summary available to you?

10 MR SCHOUTEN: Yes, I have.

MR RENNIE: Would you please read that aloud?

MR SCHOUTEN: **(INDISTINCT 1.44)** I am currently the managing director
15 of **(INDISTINCT 1.47)** division, with a company with a history
spanning over three and a half years. It is a technology company that is
designed **(INDISTINCT 1.57)** supplies just **(INDISTINCT 1.59)**
equipment for dredging **(INDISTINCT 2.00)** industries
(INDISTINCT 2.07) in engineering. **(INDISTINCT 2.04)** expertise
20 in engineering and manufacturing for the innovative vessels and vast
equipment as we describe it and of course also **(INDISTINCT 2.30)** I
could support.

I think based on the integrated systematic approach it helps us
25 developing the optimum product performance and long term business
partnerships. The company bought a customer base that includes
dredging operators **(INDISTINCT 2.41)** gas corporations, offshore
contractors, mining corporations and the government authorities in a
global rescue.

30 Iron sea **(INDISTINCT 2.48)** mining, one of the three divisions has a
proven track record for the mining of underwater deposits, onshore and
also what we name near shore and as we do already for many decades.

35 Onshore mining insulations utilise IC standard dredgers to mine for
example heavy minerals sand **(INDISTINCT 3.09)**. Near shore mining
insulations includes the dredge mining of tin from the sea and water
depths up to 20 metre under the remote corner of mining environments
from the sea and water depths of up to 150 metres, with declining
40 deposits in great length IC has over the last five years invested
intensively in developing the technology for mining deposits from the
deep sea and water depths up to 5,000 metres.

45 IC in this case IC will provide design of the floating offshore
insulation, the remote crawler mining machines, the **(INDISTINCT
3.54)** recovery systems for the corals and obtaining disposal systems.

They they are designed to comply with the latest rules and regulations on the Maritime (**INDISTINCT 4.07**) Regulatory Bodies as applicable and in relation IT Mining as in ISO 1001, 2007, 2007 certified organisation that follow a process to compliance with good engineering practice and established (**INDISTINCT 4.20**) for the offshore industry. This will allow the TTR to perform its mining activities in a safe manner taking into account the client's requirements for minimising the impact on the environment and to assure the safety of the persons on board.

And Mt Coral (**INDISTINCT4.41**) mining machines, each has its own recovery systems and are individually powered and controlled from a floating offshore insulation, mines recovery of each corridor is achieved utilising a lift winch and an A-frame together (**INDISTINCT 4.56**) in the seabed.

[9.10 am]

The Crawler mining machines consist of a tracked frame and propulsion system which forms the support of the suction boom, suction nozzle and a dredge pump for transferring mined material to the process plant on the floating offshore vessel via a rubber slurry transport hose.

Power and control is provided to each of the Crawlers by means of an umbilical cable which is deployed using a specialised winch. All safety systems will be provided for the transfer of power to the Crawler and environmentally friendly fluids will be used for the powering of hydraulic systems or the lubrication of equipment.

In order to realize this, the design of the remote crawler mining machines, their launch and recovery systems and the tailings disposal system will be based on known and developed technology and engineering experience that IHC Mining have applied in previous projects for mining clients. For the design of the floating offshore installation, we make use of our in-house naval architects, (**INDISTINCT 1.04**) Engineering. Vuyk Engineering will provide a Statement of evidence-in-chief separately.

The floating offshore installation will have an overall length of about 350 metres and a width of about 60 metres. Two remote Crawler mining machines will be installed on the vessel, one operating with the other under maintenance and on standby. Each will be equipped with a 900 millimetres pumping system for delivering the run of mine (ROM) to the floating offshore installation.

5 The tailings disposal system on the other hand will return 90% of the treated ROM back to the seabed and deposit it into previously mined areas in a controlled manner as the mining installation advances. In line with the client's requirements the tailings disposal system outlet will maintain a height of 4 metres from the seabed.

10 The size and operating water depth of the underwater remote Crawler system to be supplied to TTR relate well to the remote diamond mining Crawlers previously supplied to De Beers for their offshore mining vessel named motor vessel Mafuta (which is now re named the MV Peace in Africa).

15 This system, designed for mining operations off the coast of Namibia in water depths of 250 metres, included the remote-controlled subsea-mining crawler, launch and recovery systems, electrical systems, control and instrumentation systems, hydraulic systems, and a four-point vessel-mooring system.

20 MR RENNIE: Mr Schouten, thank you. Now, on the video in front of you I anticipate you can see the members of the decision making committee and there are also behind me (and you will be able to have them brought up) one or more counsel who may have questions to ask you about your evidence.

25 The committee that you can see in front of you is chaired by Mr Hill and he's just raised his hand, he's in the centre. On his left (your right) is Mr Christensen and then Mr Kapea, and on the right hand side of Mr Hill (your left) is Mr Rogers and then Dr Wratt.

30 So those are the people who then may ask you some questions. Thank you, Mr Schouten.

35 CHAIRPERSON: Just on that, Mr Schouten and Mr Rennie, the Department has withdrawn their cross-examination so there is none.

MR RENNIE: Thank you. So you don't need to worry about counsel, Mr Schouten. The committee may have some questions for you.

40 CHAIRPERSON: Mr Kapea?

MR KAPEA: Good morning, Mr Schouten.

MR SCHOUTEN: Good morning.

45 MR KAPEA: I note in your evidence-in-chief and your evidence that you have given today that while you give us information in regard to the

building of this crawler and its capabilities you make no mention of how it would operate on the seafloor.

5 Can you, in the conditions that are proposed at the South Taranaki Bight – can you give some insight into how you see it operating please?

MR SCHOUTEN: Can you elaborate your question a minute because - - -

10 MR KAPEA: Do I need to speak into this? I suppose I do.

Well, can you just tell me how does it operate? You've given me plenty of detail in terms of the makeup of the Crawler but how does it operate on the sea floor when its going into a trench that is going to be 10 metres deep and it is going to be extracting iron sand, or actually
15 sediment from the sea floor – sand sediment. Can you tell us your understanding of that please?

[9.15 am]

20 DISCUSSION

CHAIRPERSON: I just wonder if we can hold him and take Dr Patrick in the meantime and come back to him. We will just hold him and we will just move on to Dr Patrick.

25 MR: Good morning, Dr Patrick.

DR PATRICK: Good morning.

30 MR: You have your summary of evidence. Could you read it aloud please?

DR PATRICK: Will do, thanks.

35 Noting my evidence-in-chief was triggered by the Section 42 request for further information from the EPA, in particular with regard to Maritime New Zealand's oil spill contingency planning requirements. Likewise, the EPA staff report (and I refer you to paragraphs 275, 79, 80 and 82) and also matters raised by several submitters with regard to
40 crisis or emergency management plans, including with regard to the proposal to transfer heavy fuel oil from the tanker to the FPSO.

As a consequence my evidence-in-chief has addressed the requirements of the Maritime Transport Act 1994 regimes applicable to the proposed
45 iron sands mining operation, in particular the need for TTR to obtain a

discharge management plan including a marine oil spill contingency plan from Maritime New Zealand.

5 And if I can just insert here – just noting that there now has to be some legislative changes. There’s been some functions and responsibilities transferred from Maritime New Zealand into the EPA now.

[9.20 am]

10 I also cover the requirement for international oil pollution prevention certificates for all vessels in the FPSO, similarly the requirement for approved ship or oil pollution emergency plans for all vessels. How all of this fits into New Zealand’s overall marine oil spill plan and response system. Requirements for certificates of insurance to cover losses caused by inter alia a marine oil spill. I also address the requirements of the Maritime Transport Act regime with regard to management of garbage and finally the requirements of the Hazardous Substances New Organisms Act 1996 with which TTR are obliged to comply and including in that the regulations with regard to emergency management.

20 I would advise that I’ve had an opportunity to read through the section 44 report provided to the EPA by Maritime New Zealand dated 6th of March which addresses many of the matters that I raised in my evidence with the same advice. So obviously I endorse that report.

30 I conclude in my evidence-in-chief to all aspects of the proper management of harmful and hazardous chemicals and substances are more than adequately addressed through legislative regimes other than what I’ve called the EEZ Act including the prevention of and response to spills into the sea. And those measures will also have the effect of avoiding, remedying or mitigating effects on the environment. Thank you.

35 MR RENNIE: Thank you doctor.

CHAIRPERSON: The Fisheries have withdrawn their cross-examination as well.

40 MR RENNIE: Yes.

CHAIRPERSON: So there’s none from then.

45 MR CHRISTENSEN: Good morning Dr Patrick. Can you help me in my understanding of the transition in responsibilities or the current state of the separation of responsibilities or allocations of responsibilities

between Maritime New Zealand and now the EPA. If I look at paragraph 53 of your evidence-in-chief on the face of it I'm reassured in the sense that there you're saying to us I think all of these matters are dealt with by another Agency and you don't need to be concerned.

5

DR PATRICK: Yes.

MR CHRISTENSEN: But then when I look at paragraph 19 of your evidence you say that some of the responsibilities have been transferred to the EPA.

10

DR PATRICK: Yes.

MR CHRISTENSEN: So what I'm wanting to understand is in your opinion where should we – if we were to grant a consent in relation to this activity what are the matters that the EPA would want to be controlling through this consent as opposed to leaving it to another Agency to manage?

15

DR PATRICK: Right. The main transfer relates to the discharge management plan for offshore installations. It used to Maritime New Zealand. It is now the EPA. Now again even though it is the EPA it really would fall outside of your purview because whether you – assuming you do approve a consent for Trans Tasman Resources they still have to go to the EPA and get their discharge management plan approved as a separate exercise.

20

MR CHRISTENSEN: Right.

DR PATRICK: The marine oil spill contingency plan and all navigational safety matters still reside with Maritime New Zealand.

25

MR CHRISTENSEN: So can I just be clear about that. If we compare it to a land-based activity that might be regulated under the Resource management Act by a district council and the same activity might also require a building consent under the Building Act which would be issued by the same local authority but wearing a totally different hat.

30

DR PATRICK: Yes, that's a good analogy.

35

MR CHRISTENSEN: Okay thanks.

CHAIRPERSON: Mr Kapea.

MR KAPEA: Good morning Dr Patrick. Are you familiar with the transfer arrangement between the tanker and the - - -

40

DR PATRICK: FPSO?

MR KAPEA: Yes.

5

DR PATRICK: Not in great detail but I do know a lot about transfers. About FPSOs particularly for the offshore oil and gas industry. So I know how it works, yes.

10 MR KAPEA: All right. We had a submitter last week explain to us that when they do the – they decouple and they drop the line back to the tanker that there's oil in it and it's called spillage. And of course he was explaining how that just gets washed into the water and ends up on the shore. Can you enlighten us on your understanding of what practices
15 occur today?

DR PATRICK: That I'd be surprised at. Very surprised and from the offshore oil and gas industry we've had three FPSOs in our waters for many years although now we've only got two.

20

[9.25 am]

25 There's never been an incident like that and when those FPSOs and the off take tankers come in they offload oil from the FPSOs, this is the opposite of course, there's never been an incident and we've been doing that for over a decade now. And the off take operations initially are like once a month so there's been an awful lot of this sort of stuff happened and there's never been an incident.

30 MR KAPEA: Okay so when they disengage and we're going to have a little bit of fuel in the line do they plug that line?

DR PATRICK: I would be surprised if there's oil in the line. They can flush the line.

35

MR KAPEA: Is that right?

40 DR PATRICK: They can force the oil out of the line. I'd be quite surprised if there was oil in the line. If there was oil in the line there are automatic shutoffs so it's not a simple connection. It's actually quite a complex connection. There would be a gate, an automatic gate valve which would close the line off so there would be no means of oil to escape from the line.

45 MR KAPEA: Okay. That's all I needed to know. Thank you very much.

MR ROGERS: Dr Patrick. Are there any gaps that you are aware of between what we have to cover under the marine consent aspect and the transfer of the dumping part 200 rules? Is there anywhere that need to be careful in certain conditions should we be minded to grant consent?

5

DR PATRICK: I can't think of any to be honest, I can't think of any.

MR ROGERS: Okay.

10 DR PATRICK: No I can't think of any.

MR ROGERS: So you think it's quite clear the distinction between the mining, taking it from the seabed and putting it back to the seabed which is sort of what we're tasked with, versus discharges to water and that sort of thing.

15

DR PATRICK: Yes, yes. It's pretty well defined and again you know Stephen's analogy was with a resource consent and building permit is a good analogy, but I can't think of any gaps through which things might slip.

20

MR CHRISTENSEN: Sorry, Dr Patrick I forgot to ask you something that I wanted to. In paragraph 36 of your evidence-in-chief you talk about the amount of insurance that is required under the Maritime Transport Act and the marine protections rules for various different types of vessel. Do you have the information as to what the current amounts that would apply to the FPSO, the FSO and the anchor handling tug would be?

25

30 DR PATRICK: Complex answer, if you're okay with that. I can start with the FPSO. Currently they're required to hold insurance of \$14 million special drawing rights. So these are international monetary fund artificial currency. Okay. That equates I think you'll find in the Maritime New Zealand section 44 report to the EPA – I think that equates to about 27 million New Zealand dollars' worth of insurance. That's a bit low for a FPSO and Ministry of Transport are working right now as far as I'm aware on actually upping that level. But at the moment it's \$14 million special drawing rights.

35

40 For the oil tanker it depends very much on size of the oil tanker. If it's less than 5000 gross registered tonnes, sorry to confuse, it only needs to hold \$3 million special drawing rights. And for every additional tonne over 5000 they add an extra number of special drawing rights to a maximum of about 60 million special drawing rights. So let's say that's about 120 million.

45

5 If there was a spill from the tanker of persistent oil which heavy fuel oil is and the clean-up costs and the claims, like people like the fishing industry or if you had a whale watch industry there or something, those sort of claims, if it exceeded that \$60 million New Zealand then can draw on another level of insurance. We're a party to a thing called the International Oil Pollution Compensation Fund which comes in as an extra layer of compensation up to a maximum of \$135 million special drawing rights. So about \$270 million. So that's the levels of that.

10 With vessels over 400 gross registered tonne and also vessels with bunkers, so there's a double whammy here, again it's a size related level of insurance and it's under the LLMC, the Limitation of Liability for Maritime Claims convention, and not a lot there. For a vessel under 2000 gross registered tonnes they only need a million SDRs and then
15 again the bigger the vessel gets it steps up. It steps up.

[9.30 am]

20 There is no maximum size as far as I'm aware on that and the bunkers are the same. For vessels over 1,000 gross registered tonne they are the same as the LLMC limits. Not a lot, not a lot I must say, but it's there.

MR CHRISTENSEN: Thank you.

25 DR PATRICK: But I think again we need to be cognisant of the fact that TTR are offering a liability insurance of \$100 million I believe so, you know, that would be over and above the requirements of this regime or these regimes.

30 MR CHRISTENSEN: And do you have any information as to how the \$100 million in public liability has been struck?

DR PATRICK: No.

35 MR CHRISTENSEN: Thank you.

MS WRATT: Dr Patrick, perhaps a bit of a follow up on Mr Christensen's question around not specific to insurance but if there was to be an oil spill, in paragraph 32 you talk about where responsibility lies for clean-up and I guess in C, if the spill is beyond the territorial sea and exceeds tier 1 response capability of the spiller then the national response system kicks in. What is your level of knowledge and in terms of what
40 the national capability is compared to the fuel that will be carried in relation to this, you know, on the FPSO and FSO in relation to this
45 activity?

DR PATRICK: Okay.

MS WRATT: And I guess the basic question is do we have sufficient capacity in New Zealand to actually deal with an oil spill of that - - -

5

DR PATRICK: Sorry, Gill, this is a complicated answer, I am sorry. New Zealand's response capability is what they call a nominal 3,000 tonnes. Now I say "nominal" because responding to an oil spill, it's a very different game if you have got a dead flat sea and there's no wind blowing and it's nice and calm and you can get out there and corral it up booms and pump it away. It's a different kettle of fish if the sea is rough and it's blowing like mad and, as you found at the Rena, there is nothing you can do effectively on the water, you have to let it beach to do something with it. But we have the capability in terms of equipment and the trained personnel and the wildlife response and so on and so on, for a nominal spill of 3,000 tonnes.

10

15

MS WRATT: And what is being carried on these vessels?

DR PATRICK: Pass, I'm not sure of the details of the tanker or the FPSO in terms of the fuel volumes. But that would be a pretty catastrophic spill, small in international scales, I mean the Rena was a very, very tiny spill in international terms and it was 400 tonnes but that's a fail, you know, that's a big fail. I can't imagine either from the fuel transfer operation that is being proposed or even from – it would have to be a major catastrophe, a collision or running aground or something like that to get a loss at that sort of scale.

20

MS WRATT: Okay, thank you. And a couple of questions around Maritime New Zealand and their responsibilities. Paragraph 24 you make the comment, "Maritime New Zealand will be able to ensure that specific best practice operations and measures are adhered to such that the risk of potential marine oil or other hazardous substance spill is mitigated". How do you Maritime New Zealand go about ensuring best practice operations?

25

30

DR PATRICK: Sorry, which paragraph for that, sorry?

MS WRATT: Paragraph 24 on page 7.

35

DR PATRICK: I see, yes, sorry. How do they do that?

MS WRATT: Yes.

40

45

DR PATRICK: That's basically the inspection and certification approval regimes that they have in place. Yes, so that's how they do it. And that includes the SOPEPs it includes the oil pollution prevention certificates, insurance, all of that, that's how it fits in. But the main thing is just the approval of the shipboard oil pollution plans and just what they address and how far they go and how far they can go in terms of what sort of level of spill they have.

The Discharge Management Plan, which is now transferred to the EPA, is really where the management of chemicals and substances and the fuels on the FPSO is now going to be looked at. Normally that would be Maritime New Zealand. So it's a strange breakage in responsibilities, I am sorry, but, you know, Maritime New Zealand used to do the prevention side of things on the Discharge Management Plan and the response, in terms of the contingency plan, so it was all co-ordinated and now it's split between two agencies. So it's kind of weird but I didn't do it sorry.

MS WRATT: So those processes, to what extent do they involve actually going in physically monitoring what is happening or to what extent are they just desktop exercises?

DR PATRICK: No, regular inspections.

MS WRATT: Okay.

[9.35 am]

DR PATRICK: Yes, regular inspections.

MS WRATT: And the SOPEP, the comment further down that page, paragraph 29, you make the comment about a requirement to carry an approved SOPEP, "The SOPEP is usually approved by the flag state of the vessel concerned" What happens if the flag state has less stringent requirements than New Zealand requirements?

DR PATRICK: A good question, I'm not sure about that but I believe under port state control we can get amendments made to the SOPEP.

MS WRATT: Okay.

DR PATRICK: I believe we can require that as a port state.

MS WRATT: So outside in the EEZ rather than in the CMA?

45

DR PATRICK: In the EEZ

MS WRATT: You can still do that?

DR PATRICK: Yes.

5

MS WRATT: Okay, thank you.

CHAIRPERSON: Thank you. So just a couple of clarifications for me. In relation to the Discharge Management Plan, which has transferred, has it transferred to the EPA, I think you made some comment, change in legislation, so is that happening or happened?

10

DR PATRICK: I think it's due to happen soon, I am not exactly sure of the changeover date.

15

CHAIRPERSON: So they are currently done by MSA?

DR PATRICK: It's going to be this year, yes, I mean the transfer will be taking place sort of like between now and the middle of the year, it's not far away.

20

CHAIRPERSON: So the discharge, is that, so in this case so TTR would develop it and would the EPA certify it or simply receive it?

25 DR PATRICK: No, they approve it.

CHAIRPERSON: They approve it?

DR PATRICK: Yes.

30

CHAIRPERSON: So they have to be satisfied that it's an appropriate plan?

DR PATRICK: Yes.

35 CHAIRPERSON: Okay, thank you.

DR PATRICK: And, as I said, it covers the management of everything on the FPSO for both prevention of spills and also the response to spills. But for oil spills that's unfortunately still going to be approved by Maritime New Zealand.

40

CHAIRPERSON: Thank you very much. Thank you. Can I check, have we got mister - - -

45 MR RENNIE: Thank you, doctor.

CHAIRPERSON: Thank you, Dr Patrick. We do have him on voice?

MS GOODALL: Unfortunately, we are unable to get him back. We thought,
5 because it is 11.30 pm over there and there is no help desk facilities
available to him we might have to reschedule.

CHAIRPERSON: Okay.

MS GOODALL: We do have Dennis Karp standing by though.
10

CHAIRPERSON: All right. I think we will just work out a reschedule for
him. So shall we call Mr Karp. Mr Rennie, just before you do,
Ms Jamieson, just this morning before you got here we decided to
switch Mr Witte and Mr Venus in the order, so we are going to call
15 Mr Witte before Mr Venus this afternoon.

MS JAMIESON: Okay, we are in your hands.

CHAIRPERSON: Thank you.
20

MR RENNIE: If the committee pleases Mr Karp, when he comes up, does not
have a summary, he just simply adheres to his brief of evidence.

CHAIRPERSON: Do you want him to read that, it's only seven pages, do you
25 want him to read it or just - - -

MR RENNIE: I wasn't proposing that.

CHAIRPERSON: Okay.
30

MR RENNIE: But obviously I can if it would help you, sir.

CHAIRPERSON: I think we have all read it. We will just go to questions.
Mr Currie are you going to cross-examine or - - -
35

MR CURRIE: We have a few questions, thank you.

CHAIRPERSON: Thank you.

40 MR RENNIE: Mr Karp, good morning, can you hear me?

MR KARP: Yes, good morning, I trust you can hear me.

MR RENNIE: Yes, we can thank you and see you and my name is Hugh
45 Rennie, one of the counsel for TTR and you have a statement of
evidence of 14 February which is your main evidence. I am not going

5 to ask you to read that but you may be asked questions by counsel for one or more of the submitters and you can probably see in front of you the Decision Making Committee who may have questions for you. So I will now hand over to the Chairman of the Committee, Mr Hill, who is in the middle, and he will tell you what happens next.

CHAIRPERSON: Thank you, Mr Karp. Mr Currie, from Kiwis Against Seabed Mining has some questions for you, he is their legal counsel, so I will hand over to him.

10 MR CURRIE: Can you hear me, Dr Karp?

MR KARP: It is very blurred.

15 MR CURRIE: Should I go somewhere else?

MR KARP: No, that actually sounds okay.

20 MR CURRIE: Is that okay now? Okay, there aren't too many questions so I will keep them simple. I am referring to paragraph 10 of your evidence about the future iron ore price. You say that the study as of 5 February varied as much by or showed the price predictions varied by as much as 40 percent between the lowest and highest predictions and my question to you is what was the lowest price in that survey?

25

[9.40 am]

30 MR KARP: From memory it was ninety – I will just get that if you will just give me two seconds, it was I think 97 but one second please. I am just searching through my record now, if you wouldn't mind, you can carry on with the next question, I'll have it here in a second.

35 MR CURRIE: Okay, thank you and I would also like the highest price while you are at then, thank you.

MR KARP: Sure.

40 MR CURRIE: And my next question will be what is the lowest price for iron ore before the venture becomes uneconomic?

MR KARP: I'm not familiar with their cost structure, I am only asked to provide evidence on commodity pricing.

45 MR CURRIE: Not familiar with that, thank you. And then my next question - go ahead.

MR KARP: So the iron ore pricing from that day from Bloomberg the low was 95 and the high was 137.

MR CURRIE: Thank you. Are you familiar with the other prices today?

5

MR KARP: I am, yes, 117.

MR CURRIE: Thank you.

10 MR KARP: One-one-seven. That's the spot price not the forward price.

MR CURRIE: Understood, thank you. Is that US dollars we are asked?

MR KARP: Correct. All my prices are US dollars, sir.

15

MR CURRIE: Thank you. And my next question is are you familiar with the possibility of other metals to be extracted from the ore such as titanium?

20 MR KARP: I am but I haven't applied any value, I haven't applied any value for other metals. I have only been asked to comment on the assumptions provided by TTR with regard to freight and their iron ore assumptions.

25 MR CURRIE: Are you familiar, from your own knowledge, the current spot price of titanium per tonne?

MR KARP: No, not today. It's questionable whether the amount of titanium in the TTR ore blend will be able to achieve any noticeable premium.

30

MR CURRIE: If I gave a figure of, say, 8 percent by volume of titanium would that sound right to you?

35 MR KARP: No, I know the volume of titanium in their blend, I am just saying that invariably for meaningful titanium extraction you need a substantial amount and the TTR amount, the TTR level which for their new blend will be around 8 to 8.5, we don't see that as achieving a premium to the current pricing.

40 MR CURRIE: What would be the minimum level needed then?

45 MR KARP: You would want to go into double figures for that. In current extractions, in the current – I mean the technology for extraction changes all the time but as we currently see it, on the blends and ores that we sell of similar titanium we don't extract any premium.

MR CURRIE: And if the price of titanium were to increase significantly could that change?

MR KARP: It could change.

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MR CURRIE: Thank you, no further questions.

CHAIRPERSON: Mr Rogers may have a question for you, we'll just bring you up on his screen.

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MR ROGERS: Good morning.

MR KARP: Good morning.

15 MR ROGERS: Just could you explain the spot price, is that generally an indicator rather than what parties are able to negotiate in terms of pricing?

[9.45 am]

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MR KARP: No, that is a pricing for a particular grade of ore. So that is the pricing that we are using as our benchmark or the market benchmark is a 62 percent ore with certain assumptions on minority elements.

25 MR ROGERS: I understand that is your assumption, I am just asking if, in the practice of securing contracts, whether you are able to put in other terms based around that core point but other structures in addition to the base price taken from a commodity price such as what you are talking about now?

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MR KARP: Sorry, can you just re-ask, do you mind re-asking that question because I think we are talking at cross purposes.

MR ROGERS: Okay. What is the name of the ore price?

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MR KARP: The 62 percent index is what we use in the market. The spot index is what we use in the market for the majority of our contracts

40 MR ROGERS: Right. Now, your contracts can include other terms, can't they?

MR KARP: Yes.

45 MR ROGERS: And those other terms may include uplifts or downlifts depending on how you compare to that ore?

MR KARP: Correct.

MR ROGERS: And if you were able to find a party who was able to extract better value from your ore, you would be able to perhaps put that into the contract to reflect the value that they can extract that you are able to give to them because of what's in your ore?

MR KARP: Correct.

MR ROGERS: Have you had any of those discussions on behalf of TTR?

MR KARP: There is a vanadium component on the TTR ore which may generate a premium down the track. At this point in time and our assumptions, and my evidence reflects that, at this point time we have adopted a discount for the titanium level. In the interests of, you know, of being conservative we haven't applied any premium for the vanadium which may well carry a premium, and consistent with those assumptions we have put a 19.5 percent discount to the 62 percent indices in our price.

MR ROGERS: Wow, okay. Perhaps you could explain a little bit better for me the basis of that discount?

MR KARP: Okay, so the standard contract refers to a 62 percent indices. So the first calculation that comes into effect when you are trying to develop a final price is you will divide whatever the prevailing price on the day is by 62 percent and multiply that then by the ore contained in the specific blend. So TTR's assumptions for ore are around about the 56, 57 percent level so just for today's discussions assume a 56, so we divide whatever that final price is by 62, multiply it by 56 and that gives us a dollar value for their ore. But obviously processing a lower grade ore will cost more in energy and that needs to be taken into account as well. So invariably there will be a further discount applied.

There are a number of indices in the market, there is a 58 percent indices as well but the 62 is the liquid one and that's the one that people use for forward hedging and all the hedge markets, and that is one of the basis that we have used for determining whether the forward assumptions that TTR have made are accurate or not. We have looked at three pricing structures. We looked at cost of production, we have looked at the consensus pricing, which is basically a group of economists' view on forward pricing, and most importantly we have looked at what the physical forward price is which allows TTR the opportunity to go and hedge going forward.

5 So you will take a 62 percent ore, you will divide, you will take the price of the 62 percent, you will divide it by that number, you will multiply it by whatever the ore contained, the iron or the Fe contained is in the particular blend, so in this instance 56. You will then apply a discount structure to that ore to bring it down to what we believe will be the prevailing market at the time. And that is those numbers and all the other assumptions were the bases for my paper.

10 MR ROGERS: Okay, thank you. So talking to the vanadium, what is the content, what average have you assumed for the vanadium content of the ore?

MR KARP: At the moment we are looking at about a 0.6.

15 MR ROGERS: 0.6. So all up about 9.1 percent of the 56 or so percent that is ore is actually non-iron, is that correct?

[9.50 am]

20 MR KARP: No, well it's 44 percent of the ore is not iron. 56 is iron and 44 is non-iron made up of a variety of other blends. I mean you've got other elements, so obviously got aluminum in there, you've got silica, you've got phos and then you've got titanium and vanadium which could be payables down the track.

25 MR ROGERS: Okay so - - -

30 MR KARP: Sorry, one thing I should interject on. Is those payables are more likely to be reflected in the reduction of discount than a specific reflection of the vanadium pricing or the titanium pricing. It's just that people would sit there and say a 19.5 discount is excessive. We'll reduce that to 10 to 12. If this was a 56 percent ore with no titanium it would probably sell at an 8 to 10 percent discount at the moment. We're applying double that so if you can move from a structure where titanium is able to be retrieved and valued that would save immediately at least 10 percent on the pricing.

35 MR ROGERS: Okay and in previous discussions through this hearing we heard that TTR looked at some of the value upside work which would have included some of the ideas of smelting themselves. Were you involved in any of that?

40 MR KARP: No.

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MR ROGERS: Okay. Have you been involved with other clients? Can you just give us a feel for how those discussions generally run with trying to look at taking some of the upside in the smaller content valuable metals?

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MR KARP: Generally in our trading business we go for the low hanging fruit. And by that I mean we like to trade in commodity products where there are a multitude of customers for that product. The issue with specific lens or what's broadly termed industrial minerals is that they're tailored for a particular user and if there's ever an issue with that user it can be quite punishing on the supplier, on the producer.

10

With commodity markets – our pricing structure's been designed for what the broader commodity market will pay for this cargo going forward. We haven't actually engaged and we've never sold titanium as a company quite frankly. It's a very specialised market. We don't get involved in that. Our expertise is in the bulk commodities and base metals.

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20 MR ROGERS: Okay and where does vanadium fit in that?

MR KARP: Vanadium is used by – all the steel retailers will use vanadium. And so they will value vanadium. Vanadium is a high grade steel. They will value that down the track. So the exercise for TTR ahead of it in reducing its discount is firstly for the markets to see that there's a new producer in town who's producing a consistent product on a regular basis. Australia achieves a premium for its ores over and above the prevailing market conditions for that reason. There's no reason why a New Zealand producer won't do the same.

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When you're competing against Indonesian, Philippines, Malaysian you know titanium, magnetite producers who are very inconsistent in quality and in regulatory of supply. You know they'll promise shipments and they won't turn up because they'll be offered \$5 elsewhere. That's where we see potential upside for TTR or reduction in the discounting structure.

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And then on top of that when steel mills gets used to a particular blend and they can start optimising their extraction of the various metals they will then – that land will be more valuable to the mill and in turn they'll pay up for the minority elements in that land.

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MR ROGERS: So you're basically saying that you need to establish your reputation, get it into the market and then if there is additional value mills and the like will tend to start to share that back because it becomes a valuable item for them to have in their stock. Is that?

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MR KARP: Correct. And they can rely – they can then start relying on regular supplies. So all mills blend material.

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[9.55 am]

So they'll buy a 62 percent parcel from BHT and then they'll buy this parcel from TTR and they'll blend them together and if they can get what they call their blending regime, if they can optimise their blending regime looking at prices it has more value to them if it turns up on a consistent basis.

So looking at the spot market today which is what mills will pay to fill their short-term voids or their short-term requirements that goes up and down – it's a volatile market. But when they factor in consistent supply over the longer term at a 20 percent discount, 19.5 percent discount that's going to have great value.

MR ROGERS: And just one final question if I may, is have you sold any of the other New Zealand iron sand products?

MR KARP: No we haven't sold directly. We're very close to one of the steel mills who is a significant purser (**ph 0.44**). We have quoted on a couple of parcels in the past although we actually haven't sold – we're familiar with the specs of it, very familiar with the specs of it, we haven't sold any of their particular ore.

MR ROGERS: Okay, thank you.

CHAIRPERSON: Mr Karp, just one clarification from me, from Greg Hill. I note you were involved in the joint witness exercise with the other economists and they've relied on the assumptions – well, the commodity pricing. Nothing's changed since that date in terms of presumably Treasury discount rates don't change, strong correlation between the price of iron ore and oil? Nothing's changed in terms of that joint witness statement? We're going to hear from the other experts next.

MR KARP: Look actually the forward price, I mean the spot price is down a little bit for iron ore. But it's down a lot for oil. So I mean friends' assumptions were \$8 or \$9 higher. Those two do move in correlation. The iron ore price at the time when I took the Blumberg – the economist's view the spot price at that stage was 1.22.60, you know, today we find \$6 higher. In fact we've actually been down to 1.12 and it's now trending back up again.

So the fundamentals of the market are within the broad trading range the economists have predicted and that we see applying going forward.

CHAIRPERSON: Thank you very much. Mr Rennie, anything else from you?
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MR RENNIE: No, thank you, sir.

CHAIRPERSON: Thank you very much, Mr Karp.

10 MR KARP: Do I disconnect now?

CHAIRPERSON: Yes.

MR KARP: Thank you very much.
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CHAIRPERSON: I think we'll just keep going. It's 10 o'clock so we're ahead of schedule which is always comforting for a chair. So we'll just continue with the EPA, Dr Denne.

20 MR SLYFIELD: Thank you, sir. Dr Denne has just walked into the room so he might just need a moment to organise his papers and the EPA will call him. Good morning Dr Denne. Would you please confirm that you are the author of three documents and those are statement of evidence dated the 26th of March 2014 that you prepared for this
25 hearing.

DR DENNE: Yes.

MR SLYFIELD: A review of technical reports dated the 16th of December
30 2013 that you've referred to in that statement of evidence.

DR DENNE: Yes.

MR SLYFIELD: And you're also a co-author of the joint statement of experts
35 in the field of economic benefit to New Zealand which is dated 25th of March 2014.

DR DENNE: Yes.

40 MR SLYFIELD: Now you were present yesterday also when evidence was given by Dr Kaye-Blake. Is there anything that you heard in the evidence that he gave yesterday that you wish to comment on or that changes or views in any of the evidence that I've just referred to?

45 DR DENNE: Yes, I would like to make a couple of comments on that.

MR SLYFIELD: Please do.

DR DENNE: One is to do with the comment that Dr Kaye-Blake about whether the model that he used was valid and fit for purpose. To which he said, yes it was. As a group of economists we considered that question and essentially we came down on the side that the more appropriate, in fact the appropriate approach to analysis, would be a cost benefit analysis rather than the approach that he had taken in looking at the GDP impacts. Within that if we were looking at it from a cost benefit perspective, the benefits that we would extract from the analysis would be more limited to the tax and royalty payments and that is what we ended up saying that we felt confident about is being the benefits of the project.

15 **[10.00 am]**

But the wider economic benefits are far more uncertain, some of that reflecting the closure assumptions that are used in the modelling, such as to do with the impacts on labour, the fact that opportunity costs are ignored relating to labour and some production, that some of the impacts are – and the increased consumption that goes in the economy that has modelled is actually relating to the consumption of people who are currently outside of New Zealand and whose well-being we might not be concerned about, starting from now, and it ignores adjustment process.

So for those reasons a lot of those wider effects in the economy are less certain and if we were using more of a cost benefit analysis, we would tend to say that the benefits were more equal to rather than the \$49 million mark.

The second issue I would like to comment on is the \$200 per person number that was presented as though that was the maximum value of the environment or a value that people placed on the environment. It isn't. And in fact, Dr Kaye-Blake says that in his original evidence, he says that explicitly, that it is not a value of the environment, but it came across in that, in the discussions yesterday.

It certainly is how much or appears to be a measure of how much is currently being paid by people for environmental protection, but that is in the light of what people consider is at threat, so \$200 is being paid to achieve a level of environmental quality relative to what the environmental quality might have been if that \$200 per person had not been paid. It only would be a value of the environment as a whole, if we thought that without that payment New Zealand would be reduced

to a wasteland, so it is just a marginal impact given what people perceive as the threat.

5 So those are the main two points I would like to make, relative to what happened yesterday.

MR SLYFIELD: Thank you for that and if I have understood your comments correctly there, you are not saying that you have changed any of the views expressed in the written statements that you have prepared for this hearing rather those are comments simply responding to matters that came out of Dr Kaye-Blake's evidence yesterday?

DR DENNE: Correct.

15 MR SLYFIELD: Thank you, could you answer any questions my friends or company may have?

CHAIRPERSON: Thank you, Mr Slyfield, I have got cross-examination notices from KASM and from EDS, and from TTR, so, Mr Currie or Ms de Wit, who wants to go first?

MR CURRIE: It would be me, sir.

CHAIRPERSON: Thank you.

25 MR CURRIE: Good morning, Dr Denne, I represent Kiwis Against Seabed Mining and I have got a few questions. Some of them pick up (INDISTINCT 3.36) comments you have just made, but firstly, I might ask a few questions about option values.

30 DR DENNE: Right.

MR CURRIE: We have just heard from (INDISTINCT 3.48) values of the iron ore (INDISTINCT 3.53) vanadium and titanium content. So, my first question to you is, do you agree with the definition of "option values" by Sharp and Curr (ph 4.01) in their study, where they say that that is the value where even though a firm is not currently used in the resource, they may be prepared to pay for the right to use the services of that resource at a later date?

40 DR DENNE: Correct, I mean it is a measure of the alternative uses, the value of these alternative uses that people might want to retain.

MR CURRIE: Thank you, so, the option value is part of the total economic value, is that right?

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DR DENNE: Yes.

MR CURRIE: Do you agree that the option values have not been explicitly considered to date?

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DR DENNE: Not explicitly, correct.

MR CURRIE: And if – you probably weren't here quite in time to hear Mr Karp's evidence, were you?

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DR DENNE: No.

MR CURRIE: No, but if New Zealand was to sell vanadium or titanium and in general terms I understood him to say that titanium is there in small quantities, about eight per cent.

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[10.05 am]

But if it was in double, if figures like that 12 per cent may be economic, but he said it may be economic in the future, if vanadium posture increase – I am paraphrasing here – he was I think a little bit more upbeat about the possible contents of vanadium, so assuming either of those was correct, would this result in some royalty payments to New Zealand in addition to for the iron ore?

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DR DENNE: If there was a higher value – sorry, if I understand it – if there is a higher value use for it, that would increase the royalty payments, yes, as I understand it.

MR CURRIE: And based on the definition of option value we have just discussed, would these foregone royalty payments constitute a lost option value in economic terms?

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DR DENNE: Potentially, I mean, the option value that is reasonably expected is about potential uses that might be in the future. Normally you would expect that someone would be willing to pay for that or that in a sense of existing royalty might reflect that to some extent that the government wants payment because it is giving up something and allowing them to exploit it, so yes, if it actually was realised, the government might get a higher royalty payment, but in requiring a royalty now that to some extent is a reflection of a fact that they don't know what might be used of it in the future, but that they would like some payment to give up those rights to some future potential users of that.

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MR CURRIE: So, and it seems fair of giving up the future rights and in order to get the value now?

DR DENNE: Yes, exactly.

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MR CURRIE: Thank you, and turning to the discussion you opened, your evidence was about the evaluation of the \$200 per person based on the current national spend on the environment per person, as I understood it, we also heard from the witness about the estimated \$55 calculated value of rivers to a Cantabrian and then he applied that value to the value of beaches and coastal areas to Taranaki residents. Do you agree this is a valid approach to value the Taranaki ocean and beaches?

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DR DENNE: If you allow it to give a longish answer, I think in looking at that my understanding of the environmental issues that have been valued here is that there will some environmental impact on a part of the ocean which people will probably not visit and that the impacts on them visibly are fairly uncertain, if not minor, so we are looking for a value that might reflect that kind of environmental effect, people knowing that some damage is being done to something that they may never visit, but in some ways put a value on. So, if one is grasping for a number to use to and capture that kind of effect, the numbers taken from Canterbury are the existent value that people express relating to rivers that they may never go to visit, so that study, the study from which those have come from is explicitly looked at, existence values as in how much people place on the environment simply from fact that it exists, not relating to any use values that they attain from it. So, that is a long answer to the question saying, yes, I think it is a reasonable approach to use, to come up with a ballpark value of the environmental risk in this case.

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MR CURRIE: That seems to explain the methodology, but I don't hear you explaining to me the understanding of how the \$55 for the value of beaches can be applied to \$55 value of the ocean in Taranaki. I might say \$55 value of the rivers can be applied to the \$55 value of the oceans and beaches.

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DR DENNE: Right, okay, I mean it is making a broad assumption and possibly a bold assumption that bits of the environment that we might care about are to some extent – we could move between different types of environment than we reflect on them and value them in similar ways, so the amount that someone values a bit of the environment that they may not visit in a river might be similar to that in an ocean.

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MR CURRIE: Did you write a report about non-market water values in Southland?

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DR DENNE: Correct, I did.

[10.10 am]

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MR CURRIE: And, in that report, I am afraid I don't have it with me, but hopefully you are familiar with it, I will just ask you a few questions about that.

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You point out that there are data gaps with regard to the values of water are missing for a significant number of categories of total economic value, categories and you talk about extractive uses, existent uses for Southland Rivers, for people outside Southland, changes in water quality, changes in factors that are valued and so on.

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You go on to say that this ignores the impact on estuaries and other wetlands where nutrients and other contaminants may accumulate. Do you recall that?

20 DR DENNE: I do.

MR CURRIE: And you also say this ignores distinct values expressed by Maori. Do you recall that?

25 DR DENNE: Yes, I do.

MR CURRIE: And that you also said existence values from rivers in Southland will be held by people in other parts of New Zealand also but we don't have data to estimate those.

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DR DENNE: Correct, yes.

MR CURRIE: And you also said that these above data gaps are particularly an issue for Maori because they are linked to core values?

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DR DENNE: Yes.

MR CURRIE: And the last thing I wanted to put to you is that you said you have not analysed any impact on New Zealand's reputation for its pristine environment as a result of impacts on water quality?

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DR DENNE: Correct.

MR CURRIE: So in total you concluded that there are uncertainties with all of the values used and in all cases the values used were transferred from different sites in different parts of New Zealand and you've

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assumed that the values will transfer to other rivers and to different communities?

DR DENNE: Yes.

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MR CURRIE: So taking that analysis, I put it to you that really a very similar analysis is applicable to the current situation, is it not, and similar uncertainties?

10 DR DENNE: There are certainly data gaps there, yes, and some of those comments would apply – not always to the same extent.

15 Some of the Maori values (and I'm stepping slightly out of my field of expertise here) are particularly important with respect to those rivers because of use values and extraction of eels and other food items from those rivers - less so, I think, in this area of the ocean which is way out to sea and so those values are not so at stake.

20 There are certainly question marks over the extent to which people outside of the immediate Taranaki region place a value on the ocean area being considered here.

25 I don't have evidence for this but I suspect the extent to which people place a value on that would be less in this case than it would be for the major rivers of Southland.

MR CURRIE: We have heard for example that people (the recreational fishers, we've heard that there are divers), so you accept that people do use this area?

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DR DENNE: Yes.

MR CURRIE: And you accept that people do walk along the beach for example, or do value the beach and knowing it is there?

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DR DENNE: Yes.

40 MR CURRIE: Thank you. And another question is, do you – you are obviously familiar with the concept of the ecosystem services and the joint expert statement I think suggested that a change in the value of ecosystem services would reflect a change in the ecosystem. Do we know the economic value of the ecosystem services in the area?

45 DR DENNE: No.

MR CURRIE: So we can't really put a dollar value and compare that to the GDP or tax and royalty payments, can we?

DR DENNE: No, we can't.

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MR CURRIE: And we can't really compare the environmental costs therefore to the economic benefits, can we?

DR DENNE: There are certainly large gaps in doing so. The question mark is whether the values – the quantities that have been measured are a significant proportion of total benefits.

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MR CURRIE: And Dr Kaye-Blake suggested that even if the project entirely wiped out the environmental and existence values the benefit of the project is still 10 times the loss. Do you agree with that statement?

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DR DENNE: No.

MR CURRIE: Thank you. No further questions.

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CHAIRPERSON: Thank you, Mr Currie. Ms de Wit?

MS DE WIT: Now, I just want to look first of all about your first statement you made about whether to look at the – in terms of the benefits of the project whether the best way is to look at the GDP gain or the taxes and royalties to New Zealand, and you said that the latter is the most certain benefits to New Zealand. Yes?

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DR DENNE: Yes, correct.

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MS DE WIT: And those are reported as \$49 million annually?

[10.15 am]

DR DENNE: Correct.

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MS DE WIT: And I am just looking at the calculations carried out by Kaye-Blake in his evidence in chief you are aware of that, yes.

DR DENNE: I have it here.

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MS DE WIT: In his calculations he was defining the GDP gain by one hundred and ten thousand Taranaki residents and if the same calculation was done for the taxes and royalties that figure of two seven changes into four four five, maybe you can take that from my calculator. Now I will just put that to one side for now. Now we are

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discussing also this value of \$200 per person as sum value of what people put on the environment and you said that is in light of what people consider is currently at threat.

5 DR DENNE: Correct.

MS DE WIT: And so that is not related specifically to the values of this environment or the threats of this project and the changes to the actual environmental costs?

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DR DENNE: I don't think that is a very useful number.

MS DE WIT: And similarly the environmental, the existence value number, you said that that relates to what people might value of something they never go to visit.

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DR DENNE: Correct.

MS DE WIT: And so the DMC has to consider the effects of this activity on the environment and the EEZ Act defines the environment as the natural environment including eco systems and their constituent parts and all natural resources. So would you accept that what people might value for something they are never going to see doesn't necessarily reflect the value of the environment in that definition.

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DR DENNE: It does not, the existence value does not include the components of the environment with which people will interact. So where they directly view it or it impacts on them as a resource that they might have otherwise used, no.

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MS DE WIT: And you also said before that we do not know the value of eco system services from this area. We do not have a figure to put on that.

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DR DENNE: We have not tried to measure that but there is also a question mark over the extent to which environmental damage will be caused as a result of this mining exercise which from my reading and I have not read all the evidence appears to be reasonably limited from this particular case.

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MS DE WIT: Okay, so we have uncertainties in the environmental evidence and that flows into uncertainties in the economic evidence?

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DR DENNE: Correct.

MS DE WIT: So if we just go back to that table in paragraph 6 of the evidence in chief what we are saying, what we are looking at here, is that first figure might actually be four four five.

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DR DENNE: Yes.

MS DE WIT: That \$200 figure does not really give us a lot.

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DR DENNE: Correct.

MS DE WIT: And that \$22 figure also is not necessarily related to the effect?

10 DR DENNE: No, I think the \$22 figure is a relevant number.

MS DE WIT: That is a relevant number.

DR DENNE: Yes.

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MS DE WIT: Okay, so I am just looking at the joint witness statement at paragraph 41, now there you agreed that the economic value of the environmental impact is at least in order of a magnitude less as estimated. I am just wondering how, if the, that top figure is actually something like four four five and the below figures have the uncertainties that you have discussed, we can make that statement.

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DR DENNE: Okay, if the number is four four five and the existence value, which I think from my review of and I have not looked at all the evidence in terms of the way it has been summarised in the documents that I have seen, this existence value measure captures the large proportion of the total environmental impact. So from that perspective, yes, there are uncertainties around the environmental impact but I do not think, from what I have read, that that would lead to the doubling of that number.

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MS DE WIT: But you said we do not have any value of the eco system services, for example.

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[10.20 am]

MS DE WIT: But, you said, we don't have any value of the ecosystem services, for example?

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DR DENNE: We don't have a value of the ecosystem services that are being – how do I describe it – as they are functioning currently, yes, or that is a threat as a result of this, but ecosystem services are services that go on to produce things that people value, so in terms of the things that people value, such as the impacts on beaches that they might walk on, and so on, my reading of the evidence as summarised by others is certainly that those impacts appear to be minor or insignificant.

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5 MS DE WIT: And the things that people might value, that would be related to what their knowledge is of the area, for example, the marine area people might not necessarily know much about and therefore their value might be diminished?

DR DENNE: If they don't know much about it they might – sorry, I am trying to understand what you are saying .

10 MS DE WIT: I am saying in terms of what people might pay, in terms of what they might put a value on something that must be affected by what they know about that environment?

15 DR DENNE: Correct.

MS DE WIT: Okay, thank you.

CHAIRPERSON: Thank you, Ms de Wit.

20 MR RENNIE: Sir, it is now, good morning.

DR DENNE: Good morning.

25 MR RENNIE: You were asked by Mr Currie some questions about option values, do you recall that?

DR DENNE: I do.

30 MR RENNIE: And you indicated that you have read – much but not all of the evidence in respect to this application?

DR DENNE: I wouldn't say much, there is a lot of evidence.

35 MR RENNIE: Yes, so are you aware that – I will just go back sideways – are you aware that TTR holds a series of mining and I am going to use the word deliberately “entitlements”, just to avoid bogging down on what they have got and what they haven't yet got, which reflect their take up of a government offer of a mining resource opportunity in the South Taranaki Bight?

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DR DENNE: Okay.

MR RENNIE: Are you aware of that?

45 DR DENNE: Not entirely, no.

MR RENNIE: No, well, I will put it to you this way. The investigatory procedures which TTR have been through, you have seen those? Have you seen those referred to, some seven years of work?

5 DR DENNE: I have seen those referred to, I think I did, yes.

MR RENNIE: Yes, okay, and they are based, do you understand, on an authority given by the New Zealand government for TTR to acquire those rights in a specified block of the economic zone?

10

DR DENNE: Okay.

MR RENNIE: Now, in relation to the making available of that opportunity, can you accept that that is a government decision to make that resource available at this time?

15

DR DENNE: Yes.

MR RENNIE: So, in terms of a decision by the owner of the underlying resource, whether to offer it now or offer it later, does that decision represent the exercise by it of its option that this is a good time to make that resource available?

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DR DENNE: Yes, I agree with that.

25

MR RENNIE: Yep, and would you expect an owner of a resource in a situation like that to weigh the range of uncertainties as to future prices, future technology, future options as to the use of the materials, when deciding whether to offer it at this time?

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DR DENNE: Yes.

MR RENNIE: And in making that decision would you also expect the owner of a resource which is being offered for economic use to adopt a placing mechanism which secured to it some of the benefits in the event that uncertainties ran favourably for the person holding the licence?

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DR DENNE: I think my answer is, yes.

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[10.25 am]

MR RENNIE: Yes, well, in this case the basic structure is a situation where the TTR, if it gains the mining consent, will have to pay to the government either 10 per cent of profit based on a calculation or a 2 per

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cent royalty on revenue, whichever is the higher, do you understand that?

DR DENNE: Yes, I understand that.

5

MR RENNIE: Yes, in reaching the figure of – I think 49 million is the one that has been most commonly used, 50 million for taxation and royalty benefits, that involved some assumptions as to what the level of royalty would be, didn't it?

10

DR DENNE: It did, yes.

MR RENNIE: Now, you missed Mr Karp's evidence, but Mr Karp's evidence indicated that the position when you put a product from this mine on the market is that you start with conservative assumptions and then you try to enhance your price over the period that you are able to supply, is that rational economic behaviour?

15

DR DENNE: Yes.

20

MR RENNIE: Yes, and would you accept that going forward a royalty structure or a profit share structure of the type that I have just described is a rational means of the resource owner capturing some benefit from the uncertainty as to how the development may actually run?

25

DR DENNE: Yes.

MR RENNIE: Other than the mechanism I have just described to you for capturing that benefit and in turn I suggest that option value, is there any option value which is used, yet is not caught by that approach?

30

DR DENNE: I mean, it assumes that the government has gone through a rigorous approach in doing that work, but no, I mean, in theory, the option values can be captured in that way, and I suppose, I was suggesting that before.

35

MR RENNIE: Thank you. Now, you were also asked some questions about the existence values and some matters were put to you in relation to rivers and streams, estuaries and so forth in Southland, do you recall that?

40

DR DENNE: I do.

MR RENNIE: Existence values are not confined to water or to waterways, or seas, are they?

45

DR DENNE: Correct.

MR RENNIE: So that in identifying an existence value for an impact of a particular project, what value you will arrive at would depend to some extent on what segment of a person's overall perception of existence values you are focusing on?

DR DENNE: Sorry, I think I understand your question.

MR RENNIE: Well, I will just put it to you in a slightly different way, so we are on the same page. If we were to try and identify the existence values that you or I might have about Southland, there may be various attributes to Southland to which we would attribute a positive or a negative value at a personal level?

DR DENNE: Correct.

MR RENNIE: And those values are not simply identifiable in segments, such as rivers, streams, et cetera, unless one chooses to look at that as the topic of inquiry, is that correct?

DR DENNE: That is reasonable, I expect, yes.

MR RENNIE: And so the arrival in an area of an activity, any activity, as a new activity, might have both positive and negative existence values for persons who are not in that area?

DR DENNE: As in they might place the positive existence value on the business activity, for example?

MR RENNIE: Well, to give you a classic which was controversial, the Manapouri hydro project might have had negative values for many New Zealanders, positives for those who cared about industrial development or aluminium processing.

DR DENNE: That is conceivable, some of that might be merely capturing the fact that they think they will benefit financially from that, but yes, some people will be interested in the engineering aspects, that kind of thing, I suspect.

[10.30 am]

MR RENNIE: But even if they were to receive no personal, direct economic benefit they might perceive positively the prospect of people in Southland having increased economic opportunity, jobs and things of that nature?

DR DENNE: That is possible, yes.

5 MR RENNIE: Yes. So in seeking to assess existence values in terms of something which discolours the sea some 12 to 20 nautical miles off the coast a person may also have other existence values in terms of the benefit of jobs or economic activity in that area to the people in that area?

10 DR DENNE: That is possible, yes.

MR RENNIE: Yes. And as I understand it the exercise on which you have jointly caucused has not attempted to derive or evaluate the elements which would go into the calculation of such an existence value?

15

DR DENNE: No, I'm not aware of any studies that have attempted that.

MR RENNIE: No?

20 DR DENNE: No.

MR RENNIE: So in that sense the use of a figure from Canterbury for the value placed by people on waterways which they did not themselves intend to use is just simply an indicative value which has been used as a proxy in considering what might apply in the Taranaki region?

25

DR DENNE: Correct.

30 MR RENNIE: And as I understand it the questions were put to you on the basis that that was a value which applied both to the coastal experience and the sea experience. Is that how you understand it?

DR DENNE: Could you explain that?

35 MR RENNIE: Well, both 12 miles at sea and on the coast?

DR DENNE: My understanding is that – yes, to the extent that it is people who are not visiting the coast.

40 MR RENNIE: Yes, yes.

DR DENNE: But also in terms of where the impacts are - - -

MR RENNIE: Yes?

45

DR DENNE: - - - my understanding is that they are largely at sea.

MR RENNIE: And in terms of the use of that proxy value for the calculation, your level of comfort with that?

5 DR DENNE: My level comfort is that it is a ballpark estimate.

MR RENNIE: Yes?

DR DENNE: Yes.

10

MR RENNIE: Would you prefer that to an attempt to make a calculation without reference to a comparative?

DR DENNE: No, it is preferable to use something like this.

15

MR RENNIE: Yes. Now, you were asked in relation to the joint witness statement about the conclusion at the end of it, which you and Dr Kaye-Blake shared but which two other participants did not endorse, as to the order of magnitude of benefit from the project compared to any level of environmental cost. Do you recall that?

20

DR DENNE: I do.

MR RENNIE: And the basis for dissent (and I know it's a matter more to ask those persons about) – the basis for dissent appears to have been whether there was adequate information from which to form the view which is expressed there?

25

DR DENNE: Correct.

30

MR RENNIE: And I infer from the fact that you agreed with Dr Kaye-Blake that in your professional judgement there is sufficient information to form the conclusion which you recorded?

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DR DENNE: On the basis of the information that I have seen on the environmental effects I felt comfortable with that statement.

MR RENNIE: Yes. And in relation to that, the dissenting position (if I can put it that way) that there was not enough information to form that view

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- - -

DR DENNE: Correct.

MR RENNIE: - - - were you able to understand what was lacking in terms of the allegedly missing information?

45

DR DENNE: Can I suggest that you ask them?

MR RENNIE: Sure.

5 DR DENNE: I'd prefer not to speculate.

MR RENNIE: At all events you were persuaded by the information available to you to the view that you then reached?

10 [10.35 am]

DR DENNE: I was persuaded, yes.

MR RENNIE: Yes. And is that still the view that you hold today?

15

DR DENNE: It is.

MR RENNIE: Thank you.

20 CHAIRPERSON: Thank you, Mr Rennie.

MR CHRISTENSEN: Good morning. I'd like to explore with you a little the comment you made about if we are to choose a model for economic analysis in this context you would prefer a cost benefit model to a whole of economy model such as Dr Kaye-Blake has used.

25

And you go on to then say that were you to use a cost benefit model you would really only count the projected tax and royalty revenues to the Government as economic benefits to New Zealand. Is that correct?

30

DR DENNE: Yes.

MR CHRISTENSEN: I'm just wondering whether that is a very conservative approach because I would have thought from what we've heard that there is some expectation that the project will cause – if it were to go ahead, will cause other economic activity to occur which otherwise wouldn't occur in New Zealand.

35

DR DENNE: Yes, it is conservative but I am not sure as to how conservative it is. I think those other, wider economic benefits are far less certain and some of them – I mean, if I can kind of explore that a little bit.

40

The model has been used to suggest that there will be increased employment and increased consumption as a result. The kind of model that has been used has the so called "closure assumptions" that enable it to reach a new equilibrium.

45

5 So it starts with supply meeting demand in all markets and then it kind
of introduces something to the model to increase cattle spend and
expenditure in some particular sector, and then it models some new
equilibrium. And in order to get to that new equilibrium it has to
assume some things are fixed. It either fixes labour costs (so wages) or
it fixes the amount of labour. So in this case, because it is measured in
increase in employment it is fixed wage rates. So that is obviously
some kind of proxy and essentially there will be some mix of those
10 things going on.

15 So, if we explore those two things – if there is increase in employment
we know from the comments that have come through from other bits of
evidence that some of that work is people who are currently outside of
New Zealand, moving to New Zealand to take up positions. So to the
extent that they are obtaining wages we know that at the moment we
don't really – we're not interested in their welfare because we are
taking a New Zealand centric position here.

20 So some of those we could potentially ignore. Some of the wages paid
or the employment in the region that might be for New Zealanders, we
know from other comments being made that it is likely to be skilled
labour rather than unskilled, so this is most likely to be people moving
from other places.

25 So the extent that they are being paid more that might simply be
compensation for the fact that they are having to move place, and as I
said before, this is an equilibrium model so it doesn't measure the
adjustment costs, it just measures what happens in this new equilibrium
30 position.

35 So there are costs of adjustment to go along the way, which is people
shifting, moving their families or whatever to the region. So those
costs are ignored.

40 So when you start to dig into the details you can dismiss some of those
potential benefits as saying actually, they are compensated by other
costs or they are benefits to people that actually at the moment we
don't care about.

45 So you can reduce those quite a bit, and I think if you were doing a cost
benefit analysis you would tend to say that the amount that is paid to
people to work on this plant reflects the opportunity cost of them
supplying that labour. They need to be paid these wages because they
are doing something else at the moment and need to be compensated

for those missed opportunities plus the costs of adjusting, moving, all of those things.

5 So a lot of those things that get measured in a GDP model as an impact are probably - the costs associated with obtaining those benefits are equal to the benefit so I would tend to almost dismiss a lot of those.

[10.40 am]

10 That said, there will be some positive impact but I don't know how large it is. And it's very hard to do this kind of analysis outside of a model so we're kind of reliant to some extent on the whirring and machinations inside the model to get a result. I feel more comfortable with a GDP type model at the national level rather than using it for a
15 specific project in a specific part of New Zealand.

MR CHRISTENSEN: The comments that you made about the appropriateness of discounting some of the employment and income benefits that if you were unthoughtful I suppose you would say you will count them but in
20 fact they're representing transfers from other parts of the economy or whatever it might be. Does that also pertain when we're talking about induced and I think that's the word, spending in other parts of the economy. So we heard evidence that the expectation would be that some of the ongoing maintenance engineering that was required to
25 support the TTR activity would be contracted to New Zealand and local firms.

DR DENNE: Yes. GDP as a measure, I mean in a sense it's a strange thing in that it's adding up all the expenditure in the economy. Normally those
30 are things that we think of as costs. So when there is induced expenditure in other sectors those things are not free. So they will be resource costs associated with supplying those things which is not getting counted in the GDP model.

35 MR CHRISTENSEN: How should I best understand the context of this type of project where a lot of the capital to pay for the goods and services that are consumed by the operation are imports to the country, in other words it's capital that comes from investors offshore? How should I understand the extent to which that does or doesn't benefit the
40 New Zealand economy?

DR DENNE: Right well it depends on what happens to that capital. If you think of a project in which capital is spent in all the New Zealand
45 supplies resources at their opportunity costs so they're compensated for the costs of supplying those resources, the profits are extracted overseas by the capital owners then you could say that New Zealand

gains nothing beyond what it manages to extract via taxation and royalties. There is likely to be some additional benefit from increased wages paid to some people which go beyond compensating them for shifting. So there are benefits from that, but we're not able to dig in and put a number on that. If that answers your question.

MR CHRISTENSEN: Yes, thank you.

MR KAPEA: Good morning. You touch a little bit on Maori values in terms of some work you did down south and you made reference that it may not apply to the relationship they have with Taranaki because this area is quite a long way offshore. You will be familiar that Maori see their environment as a whole.

DR DENNE: Yes.

MR KAPEA: And those values don't change from a river to a stream to moana.

DR DENNE: Correct.

MR KAPEA: So how do you fit Maori values into these economic models where they're represented fairly?

DR DENNE: Well with some difficulty – I mean I think they are included to the extent that Maori are participants in any survey work in which they express a value for particular environmental components. So in that sense they are incorporated. Maori express the way that they relate to the environment or perceive the environment differently from others, I accept that.

But when we're talking not about changing the whole of that relationship but just some marginal change in the quality of the environment I think at that level although they think of the environment in a different way, the way that that impacts on them is probably quite similar when we're talking about marginal changes as in a small change in the quality of the environment and what we obtain from it rather than wholesale change.

[10.45 am]

MR KAPEA: Okay how does that affect them in terms of them being kaitiaki? Guardians of an area as a whole.

45

DR DENNE: I think when there is environmental damage Maori feel some responsibility for restoring the environment to its more pristine state. So there is that level of additional cost if you like. That sense of responsibility.

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MR KAPEA: And then would you add to that the cost of their – the concept of leaving the environment in a better state or in at least the same state for future generations?

10 DR DENNE: Yes. I accept that that is there indeed.

MR KAPEA: Because I don't see any of that factored into their studies.

15 DR DENNE: Right, but some of this is long-term as in the feeling is not that there cannot be any environmental damage, Maori undertake activities that cause environmental damage just as in looking at the dairy impacts in Southland. Maori are purchasing dairy farms and causing environmental damage as well. So that can be consistent but this need for restoration, and again this is my understanding I hasten to add, is a
20 long-term view as in you want to get there in the long-term.

For this project if there is short run environmental damage but once the project is over things will be restored then to that extent there isn't so much of an issue.

25

MR KAPEA: Are we certain that they will be restored?

DR DENNE: That's beyond my expertise.

30 MR KAPEA: Okay. Can I then ask you in terms of 42 of your evidence-in-chief, we've relied upon reports from other experts who have expressed some uncertainties, our priorities may reflect these uncertainties.

DR DENNE: Yes.

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MR KAPEA: Can you explain that to me please.

DR DENNE: Okay. There are clearly always going to be uncertainties both on the economic side and on the environmental side in terms of the
40 impacts. So we are using ball park numbers taken from somewhere else to try and represent the order of magnitude of effects but there will be uncertainties, quite considerable uncertainties, around those numbers.

45 MR KAPEA: That's all I need. Thank you very much.

MS WRATT: Thank you Dr Denne. I'd like to get back to the paragraph 41
in the joint witness statement about the economic value of
environmental impacts at least in order of magnitude less. I assume
what you're meaning there is it's an order of magnitude less than the
5 economic benefits?

DR DENNE: Correct.

MS WRATT: Yes. So in the approach that you've recommended around
10 using the benefit being tax and royalties of around \$44 million or
whatever.

DR DENNE: 49.

15 MS WRATT: 49 sorry. And then if you look at the end take taking the
environmental values that was in William Kaye-Blake's analysis that's
not an order of magnitude different. Is that correct? I mean that's my –
you're talking about and I think our EDS colleague had something like
\$450 per person of economic benefit.

20

DR DENNE: Correct.

MS WRATT: And then if you looked at the figures in Kaye-Blake's paper
you're getting to over \$200 of environmental cost.

25

DR DENNE: That \$200 number was thrown in as being a total value that
people place on the environment just to say look let's get some
constraints on how high this might be. I'm saying that's irrelevant. I
think the value that people place on the environment might be
30 considerably higher than that but we're not actually being asked to
measure that. We're just saying what's the impact here?

My understanding is that the major environmental impact at risk here is
on existence value as in – and it is substantially captured by the
35 existence value number.

MS WRATT: Right.

[10.50 am]

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DR DENNE: If I'm incorrect on that and that there are much greater
environmental impacts beyond what I have been privy to or have read
then that might change but my understanding is that is the nature of the
environmental impacts from this project.

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MS WRATT: Okay, so you are saying that you are actually that assessment is based on an expectation that there is not a major environmental, the environmental effects from this activity are relatively minor, based on the scientific evidence that has been presented.

5

DR DENNE: Yes, that is right.

MS WRATT: Okay, so in a way it is a marginal cost of the, environmental cost of the project?

10

DR DENNE: Correct.

MS WRATT: Okay, thanks very much, that is really cool.

15 CHAIRPERSON: Just a couple of questions from me. Just again, in terms of the joint witness statement I just want it to be clear under issue 11, net economic benefits fact, cost benefit analysis is the best way to estimate the net economic impact. So that was agreed by all the parties including Dr Kaye-Blake?

20

DR DENNE: Yes, right, sorry, notwithstanding he had a different model. He still says this is the best way to determine net economic impacts. He agreed to that.

25 CHAIRPERSON: If under that assumption the \$50 million which is the forty nine that you are referring to in terms of taxes and royalties, the question we have got, we heard yesterday from Fisheries and some of the submissions from them is that they will be adversely effected from Fisheries in terms of the amount of catch and therefore there may be an economic dis-benefit to them. We have heard, we have got submissions we may here when we are in Taranaki, people who have other activities like and we certainly heard from, last week in Hamilton, people who have, tourism activities, diving and recreational fishing businesses, who also say there may be dis economic benefits to them, if this proposal goes ahead. Have they been factored into your approach, it would appear not, if we are just looking at taxes and royalties, because we are talking about the positive benefits that maybe gained and any comment on that and I do not know whether you have calculated those.

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40 DR DENNE: No, I mean think from the numbers that I have seen, MPI had a look at the impacts on commercial fishing and thought they were minor. I have not done a separate analysis but I assumed that they are correct in that. In terms of the impacts on commercial recreation and things like that, again, no I have not looked at that in detail but I had assumed that they were minor.

45

CHAIRPERSON: Right, so that was based on the other submission. And the final question is that at forty the project is, this is in the joint witness statement, the project is likely to have a positive net economic benefit, so we are putting aside all the adverse effects in terms of environmental effects, just from an economic point of view, there will be a net benefit. The test that we have, that is what you say there?

DR DENNE: Just to be very clear, when I say net economic benefit, including the environmental effects as part of the economic effects,

CHAIRPERSON: Okay, right, okay. So just to be clear for me, the Act says the EPA, the decision making, must take into account the economic benefit to New Zealand. So in terms of that statement is like a positive economic benefit, is that, in terms of your definition, in terms of tax and royalties, is that clearly to New Zealand or are you looking at something wider than New Zealand?

DR DENNE: No, New Zealand. I am looking at New Zealand.

CHAIRPERSON: Yes.

DR DENNE: Tax and royalty payments.

CHAIRPERSON: Thank you very much. Mr Rogers just has one question too.

MR ROGERS: Morning. Just a question, and I was asking it yesterday, but it is around the issue looking for your advice from an economics point of view, around the difference between the asset values and the cost values which are obviously time based. Because we had presentations, for example, from recreational fishers saying well I have got an asset that is \$100,000 worth of fishing gear and you ruin my fishing then what am I going to do with that. Similar also to the issue around someone is prepared to pay a million dollar for the wonderful scenic view and then that is degraded, how do you deal. So can you comment for me please, you also made the comments around transition costs between, call it project start up and project shut down, where there maybe ongoing costs that are not part of the ongoing project costs, can you just explain economically how you would deal with those transition costs between assets and the types of economic costings that we have had today which are basically time based?

[10.55 am]

DR DENNE: The assets such as – if someone has purchased a fishing boat, or something - - -

MR ROGERS: Yeah, and I suppose it also applies to the equivalent that we have got X million tonnes of phytoplankton, we have got X million tonnes of benthic ecology and we have got – so, to me it goes to those our assets that we have trouble deciding what they are worth, but if there are negative or positive impacts on those, how should we be thinking from an economic point of view about the transition not only in the day-to-day stuff, sorry, the time-based values, but also the asset equivalent values or the liability values around the affected – and I will call them assets, whether they are environmental or economic.

DR DENNE: Right, I think those slightly – I mean if we are talking about a physical asset, such as, if I can use a fishing boat, to kind of capture it, somebody has paid an amount of money, they invested in that asset, that is a sum cost at this stage, what is lost and in a sense we ignore that, that has already been spent, we can't do anything about that expenditure, what is lost is any benefits that you might obtain from using that in the future, so if that asset can no longer be used for productive activity, it is the benefits from the productive activity that are lost, the asset has already been, you know, in a sense we have already spent that money, nothing that we do now can change that.

If we are talking about phytoplankton as an asset, that seems to be something slightly different in that the phytoplankton is providing benefits that are then – it is not like a sunk expenditure, it is like income rather than an expenditure item, if you know what I mean.

MR ROGERS: I struggle with the difference, I mean, you could argue then that phytoplankton is a sum cost but it continues to give a benefit as does a fishing boat, if I understand your point around a sum cost, or a sum capital, is that you don't account for the asset?

DR DENNE: Correct.

MR ROGERS: And I sort of, I suppose, I am hoping you can help me with how you – the problem with the analysis that I see at the moment is that it talks about ongoing stuff, it doesn't talk about any transition losses as you were discussing earlier, and therefore it is missing something and that is what I am struggling to bring in to our decision framework is we are charged with looking at the economic benefits and the environmental benefits, these benefits, and then coming together to say, yes or no. But this business of discontinuity between in the project phase versus the transition before and the transition after, I am hoping you can help me with an economic model that may be available to help deal with those sorts of discontinuities that we would really be minded to think of in making a decision.

DR DENNE: Right, okay. Well, I mean I think the best way to think about this is – okay, you will have – the transition cost is going to be people having to move around, possibly some assets that will no longer be used for what they were originally going to be used, although I haven't
 5 seen much evidence to say that there is large quantities of that, you are suggesting that it might be in the – fishing related or something like that, that is possible that those things will – but that will be taken into account to some extent in that where the modelling looks at a reduction in an activity and at some stage an increase in another, so you could
 10 argue that has been taken into account.

The transition costs in terms of the environment is the other thing that you are alluding to, I am not an ecologist, so I won't pretend to explain how that might happen in terms of – presumably it too will go to some
 15 new equilibrium position as a result of the project staffing and at the end of it, and there will be some transitional effects associated with that.

[11.00 am]

20 So, my argument earlier was on transition costs because they are definitely there, if we take the conservative approach of just calculating the royalty payments and the tax payments, we are almost assuming that the transaction costs, the adjustment costs are as great as the
 25 positive benefits more widely in the economy and we can kind of ignore those things.

And that seems to be a reasonable and safe assumption to make, but even if we do that, it appears to me that the benefits exceed the costs.

30 MR ROGERS: So, then the risk becomes the things that aren't in the model, that need to be valued?

35 DR DENNE: The risk becomes – whether we truly have captured all the environmental effects and I am right in the assumptions that I am saying about it largely being captured by existence value.

MR ROGERS: Okay, thank you.

40 CHAIRPERSON: Thank you, Dr Denne, very much, thank for that. Sorry, is that you, Brett, you are hidden down the back, I sort of forget, sorry for that, thank you, Mr Slyfield. Thank you everyone, it is 11 o'clock, so we will take the morning break and come back at quarter past, thank
 45 you.

ADJOURNED

[11.01 am]

RESUMED

[11.18 am]

CHAIRPERSON: We have reconvened. Mr Currie, is it your two witnesses?

5 MR CURRIE: Yes.

CHAIRPERSON: Are you going to call them jointly or separately?

10 MR CURRIE: I think jointly, they have prepared their evidence jointly so I believe you have done that with some other witnesses and used the same protocol.

CHAIRPERSON: Thank you.

15 MR CURRIE: Mr Walter and Mr Ljubownikow, is that correct?

MR LJUBOWNIKOW: Ljubownikow.

20 MR CURRIE: Ljubownikow, thank you. Good morning, Sebastian, Walter and Gregory Ljubownikow and you have prepared a statement of summary evidence, have you not as of last Friday?

MR LJUBOWNIKOW: Yes.

25 MR CURRIE: And would one of you like to read that?

CHAIRPERSON: Mr Currie, just before you do, again the question that we put to the others, this is a joint statement so you both agree with everything in it?

30

MR WALTER: Yes.

MR LJUBOWNIKOW: Yes.

35 CHAIRPERSON: So if questions are put to you, you would answer in a similar way?

MR WALTER: Different areas of past evidence, in particular, looked at by Greg and parts in particular I looked at, so.

40

CHAIRPERSON: I am sure you answer questions slightly differently but they are not going to be contradictory to each other, I assume, if you agree with everything in the statement because I assume the questions you might get, might get put to one of you and it might get to be confirmed by the other. I mean I will leave that over to Mr Rennie or Mr Beaton
45 how they question but as we found with the other joint witnesses with

Dr Huber and Mr Yates and the way it worked was that, one of them answered the questions and then the other one then confirmed it or answered a similar question or said they confirmed it, so I assume we just follow that same - - -

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[11.20 am]

MR CURRIE: And if one of you disagrees with the answer of one then you make that clear.

10

CHAIRPERSON: And you need to say why, thank you.

MR CURRIE: Thank you. And after you've read your statement of evidence I understand were both of you here this morning during Dr Denne's evidence?

15

MR: Yes.

MR CURRIE: Okay, so if you have anything you'd like to add to your statement following that discussion can both of you please add that at the end of your statement.

20

MR LJUBOWNIKOW: So our summary of evidence and we'd like to start with a correction. In our submission we mistakenly labelled our discussion existence value calculations paragraph 19 to 27 while we were actually discussing total economic value consisting of both use and non-use value. We should change the terminology in paragraph 19 to 24 from existence value to total economic value.

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Paragraph 19 would then read, "Total economic value calculation. The total economic value calculation is still not sufficient to convince that the true value of existence has been assessed in the economic modelling that underlies the application".

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Paragraph 22 would read, "In addition a report commissioned by TTR and carried out by Phytom Consulting pointed out that the proposed mining activities are likely to impede commercial fishing activities in several ways. See affected industries section of the submission for further details. These impacts have in no way been considered in the calculation of total economic value".

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Only in paragraph 25 do we actually start the discussion of existence value as part of the total economic value. We apologise for the confusion this might have caused but this does not change there is still uncertainty about the way the assessment of total economic value including existence value has been connected. This makes

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estimating the effect of total economic value in general and on environmental cost in particular difficult and places a degree of uncertainty on the effect of the project.

5 The climate impact assessment by Dr William Kaye-Blake suggests that potential negative effects on affected industries are marginal. The following evidence suggesting impacts on affected industries need further investigation. A negative impact on fisheries cannot be ruled out. Paragraph 7 of SKM report highlights that the concentration of
10 some metals including nickel within water discharged from the mining facility is likely to exceed recommended guidelines for the protection of marine organisms.

15 The significant dilution required following discharge to reduce nickel concentrations below levels at which impacts can be expected on marine organisms warrant a more detailed assessment. Additional modelling of this impact is currently being undertaken as we understand but has not been considered in the economic assessment to date.

20 Furthermore the economic review by AECOM of the SKM report in paragraph 17 suggests that there is insufficient scientific verification studies that have attempted to measure the impact on seabed mining activities on mortality rates and spawning activities, and from the
25 research that has been contributed to the NIWA report it cannot be ruled out that the site may encompass the majority of high value spawning sites. Paragraph 19 that was.

30 A negative impact on tourism and recreation cannot be ruled out. Experts in the field of social recreation and tourism impacts in their joint witness statement agreed that the New Zealand clean green image is an important part of this country's tourism brand including the 100% Pure position in New Zealand's international tourism promotion. Paragraph 16.

35 In particular Dr Fairgray's view was that not sufficient evidence was provided to support the statement that there is very little potential for adverse effect on New Zealand's tourism brand. Dr Fairgray further states that it would be necessary to identify the main components of the
40 brand and identify what contributes to those components and establish that enabling seabed mining would not detract from that brand.

45 The economic impacts assessment and the application does not provide scenario or sensitivity analysis of certain input parameters. Such analysis is required to understand the risk and uncertainties of the proposed economic impact.

5 The economic impact assessment is based on the single scenario projections provided by the applicant. At the economic expert conferencing all experts agreed that it would be useful to analyse the effect of changing input assumptions on the proposed economic impact.

[11.25 am]

10 The economic impact assessment presented in the application does not sufficiently highlight the uncertainties around potential environmental cost. At the economic expert conferencing all experts agreed that there is more uncertainty around the environmental costs than the economic benefits of the project.

15 At the economic expert conferencing all experts agreed that from the existence value it remains uncertain if the environmental cost extends beyond the life of the project. However, environmental costs beyond the life of the project have not been considered in the economic impact assessment.

20 The economic value of affected ecosystem services remains uncertain. Only a limited fraction of affected ecosystem services have been included in the economic impacts assessment. For example tourism and recreation. However, other ecosystem services maybe affected such as supporting services, provisioning services and regulating services. The potential impact on some of these services has been assessed by other experts. However the economic value of these services have not been considered in the economic impacts assessment.

30 The economic impacts assessment uses an incomplete estimate of existence value the study from which value as taken was conducted in context of inlands, water bodies in Southland. It remains unclear to what extent the value can be directly transferred to the environment in question. The study from which a value was taken noticed the following limitations. We do not attempt to differentiate between options and existence value or between existence value and bequest value. Existence value measures include the value occurring to Southlanders but not to other New Zealanders and additional values noted by Maori would be expected to result in greater preference for and valuation of existence

45 The economic impacts assessment assumes that only a regional population places a value on the environment affected by the project while the rest of the population is indifferent. It remains unclear to what extent this assumption holds true.

11.5. 11.5(a) to (d) above. There appears not to be sufficient information to support the statement that economic value of the environmental impacts is at least in order of magnitude less than the economic benefits. The original economic impacts assessment stated that the GDP impact on New Zealand would be NZ\$302 million per annum. However the economic experts have agreed that the GDP impact does not reflect the welfare impact for New Zealanders.

The economic experts have agreed that the tax and royalty payments of approximately \$50 million per annum can be considered the expected baseline welfare impact for New Zealanders. Additional benefits are more uncertain and will depend on the extent to which a project results in higher net wages, increased net employment and increased net returns to capital. For example it is unclear to which extent unemployed New Zealanders will find work in the project to extend possible increase in the wage rate are pure surpluses for compensation and working condition. For example longer working hours, offshore work location, high risk.

In conclusion the goal of the summary evidence is to provide an additional perspective on the economic impacts assessment undertaken by the NZIER to inform the decision before the panel by the (ph 3.32) NZIER report assessment has been completed to widely accepted practices. The above presented evidence suggests that uncertainty remains about the environmental cost of the project, the economic impacts on affected industries and the size of increased welfare to New Zealanders.

Given these uncertainties we're left to conclude that more research would be required to support the statement that the economic benefits of the project are at least in the order of magnitude larger than any negative impacts.

MR CURRIE: Thank you and is there anything you'd like to add to that based on what you've this morning or corrections or change or anything that you've just read? Thank you.

MR LJUBOWNIKOW: I think a few things have been addressed this morning already by Dr Tim Denne. For example the discussions about GDP I think he's saying something similar to what we're saying so we're agreeing with him that the baseline is the tax and the royalty payments. So this hasn't changed.

But we would say the same thing in that respect as Dr Denne. And in terms of the environmental costs I think there has been quite a bit of discussion this morning around what these costs are and how we should

be measuring them but we still have the impression that there is uncertainty around these so that hasn't changed.

[11.30 am]

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MR CURRIE: And Mr Walter you agree with that? Is there anything you'd like to add?

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MR WALTER: Yes I do agree. In terms of the environmental cost that seems to be the main risk if they've been valued correctly and there are figures in the NIWA report that we've cited in our evidence that states that the annual value of the entire New Zealand marine environment is valued around \$184 billion per year and even if you take a very very small fraction of that and hypothesize that and a very very small

15

fraction of that is impacted then the environmental cost already is non-minor.

MR CURRIE: Thank you. Will you answer any questions please?

20

CHAIRPERSON: Mr Rennie.

MR RENNIE: Thank you, good morning gentlemen. Am I right that although you heard Dr Denne this morning you did not hear Dr Kaye-Blake yesterday?

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MR WALTER: No, I heard Dr Kaye-Blake.

MR RENNIE: Thank you.

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MR LJUBOWNIKOW: I did only hear the last maybe 20 minutes of his evidence because my plane arrived late and he was scheduled forward.

MR RENNIE: So when you were invited a moment ago by Mr Currie to raise any additional matters did you take into account whether you had anything more you wished to raise in respect of Dr Kaye-Blake?

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MR WALTER: I did since I heard his evidence and therefore, sir, I gave Greg a rundown on the evidence. That has been presented.

40

MR RENNIE: Thank you. In the summary which you've just read if you could turn to paragraph 5(c). You suggest there are other ecosystem services which might be affected you say such as supporting services, provisioning services, and regulating services. Are you referring there to services for which the project is the consumer or are you referring more widely than that?

45

MR LJUBOWNIKOW: For this statement we've actually relied on the ecosystem services framework that Dr William Kaye-Blake cites in his evidence and this framework outlines a number of different ecosystem services that exist. And supporting services, provisioning services and regulating services these are some of the services that are considered under this framework. But that have not been explicitly considered in the assessment.

MR RENNIE: Do you accept that there is no reason in respect of any of those three to envisage a negative value in terms of an impact?

MR WALTER: That would need to be assessed by an ecologist or environmental expert.

MR RENNIE: Now if you have available to you the joint witness statement.

MR WALTER: Yes.

MR RENNIE: If you turn to issue 4 which appears on page 3. Dealing with welfare impacts. First paragraph 17. You agree that the project will lead to taxes and royalty payments which will be a minimum baseline estimate of welfare benefits to New Zealand. That was the common view of all experts wasn't it?

MR WALTER: Yes, correct.

MR RENNIE: Yes and do you accept that the actual size of both of those will depend upon either the minimum guarantee which is the royalty based on gross revenue or potentially the maximum figure which is based on a share of profit plus taxes in favour of the government?

MR WALTER: Yes, but as Kaye-Blake has stated yesterday, he said he tested it in model and it didn't make a major difference which scheme – which calculation method was used if I recall correctly.

MR RENNIE: That depends to some extent on the international market in which the product is ultimately sold doesn't it?

[11.35 am]

MR WALTER: Yes, on a price.

MR LJUBOWNIKOW: Yes.

MR RENNIE: Thank you. And then in the next, in paragraph 18, you all agreed that in general wider economic benefits result from higher

wages, increased employment and spending, and increased returns to capital. That's correct?

5 MR LJUBOWNIKOW: That is correct, in general that is true.

MR WALTER: In general?

MR LJUBOWNIKOW: Yes.

10 MR RENNIE: So are you accepting that those benefits will arise from this project?

MR WALTER: It depends.

15 MR LJUBOWNIKOW: It depends, yes.

MR RENNIE: It was a wonderful stereo effect and I wonder if one or other of you could lead off and whether you accept that they will arise, and if so on what is it dependent?

20 MR LJUBOWNIKOW: I think it's been explained quite in detail by Dr Tim Denne on what it depends. So it will depend on the returns to labour, and I don't know if we should go through that again?

25 MR RENNIE: No, if you are happy with his presentation of it then we can just move forward.

MR LJUBOWNIKOW: Yes, I am.

30 MR RENNIE: Thank you. Then we turn over to the next page, paragraph 19 – “The physical impacts on fishing stocks have been considered by other experts”, and you say, “No economic analysis of these impacts has been undertaken.” That was the common view of all experts?

35 MR WALTER: Yes.

MR RENNIE: Yes? So for the committee's purposes the relevant evidence would be such finding as they may make on what those impacts to fishing stocks are?

40 MR LJUBOWNIKOW: As to what the economic value of the fishing stocks are and any impacts on that, be it positive or negative, as the fishing expert outlined, that there might even be higher catch rate? I just – I'm not expert on fishing but - - -

45 MR RENNIE: Yes, I - - -

MR WALTER: And it's also not just a value of the fishing stocks but also the flow on effect and trickle down effects through the economy. So I think, yes, that would need to be modelled too if there were any impact.

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MR RENNIE: Yes, my question actually wasn't directed to inviting the committee to all become economists but rather to say that in assessing that issue the evidence for the committee is the evidence about the impact on fishing stocks. There is no economic evidence which is based on that?

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MR LJUBOWNIKOW: Yes.

MR RENNIE: Thank you. In paragraph 20 there may be some wider environmental costs as a result of any increased economic activity in the wider economy. You have that?

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MR LJUBOWNIKOW: Yes.

MR RENNIE: And that was the common view of all of you?

20

MR LJUBOWNIKOW: Yes.

MR RENNIE: And then 21, you are commonly agreed that there are likely to be some wider economic benefits. You see that?

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MR LJUBOWNIKOW: Yes.

MR RENNIE: And is it the position therefore that the baseline figure which we were looking at earlier will be a figure less than the total benefit but we don't know what the total benefit will be above that baseline?

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MR LJUBOWNIKOW: So the baseline is what it is. It's a baseline.

MR RENNIE: Yes, but I understand paragraph 21 all of you were agreed that there are likely to be wider economic benefits but the quantum of those, none of you were able to assess?

35

MR LJUBOWNIKOW: Yes, for the reasons Dr Denne outlined.

40

MR RENNIE: So we should see the baseline as essentially a minimum level of benefit?

MR LJUBOWNIKOW: Yes, I think that's right.

45

MR RENNIE: Thank you. And in relation to the South Taranaki region, looking at it in terms of the regional or district economy of South Taranaki, have you made any assessment there as to whether there are unutilised capital assets which may gain a value through the economic stimulation of this project?

MR LJUBOWNIKOW: No, we have not.

MR RENNIE: Thank you.

CHAIRPERSON: No follow up, Mr Currie?

[11.40 am]

MR CURRIE: No, I think given the questions asked by my friend, would it have been useful to have conducted a further economic analysis and take into account some of these matters to inform the committee?

MR LJUBOWNIKOW: I think in the summary we are applying that we think it will be – or it would have been beneficial to conduct scenario analysis, so to basically present the Committee with different outcomes depending on different configurations or let's say with different "What if" scenarios, so we heard the impact on fishing is likely to be minimal, what if it was not? Being very clear about the likelihoods of these events occurring I think that would have presented the panel with a range of the possible economic outputs. So, we think, yes, it would be beneficial to have different scenarios presented.

MR CURRIE: Thank you.

MR CHRISTENSEN: Gentleman, I am looking at the joint witness statement at paragraph 40 and so there you, along with the other experts, tell us that the project is likely to have a positive net economic benefit, and what I understood from the previous witness was that the baseline for assessing that net economic benefit was to use the royalty and tax revenue assumption?

MR LJUBOWNIKOW: Yes.

MR CHRISTENSEN: Yep, and that beyond that the other economic benefits and the economic costs were sufficiently uncertain and of likely magnitude, such that they effectively cancelled each other out. Is that your opinion?

MR LJUBOWNIKOW: My opinion is that it is very difficult to say that, because we don't actually know all the values, so it is difficult to say, and I think we would need more information on that, but having said that, as we said, there is likely to be benefit.

5

MR CHRISTENSEN: I beg your pardon, likely to be what?

MR LJUBOWNIKOW: So, if we look at these per annum payments then and we don't provide any scenarios, so under the current scenario there is likely to be a benefit, but there is uncertainty around that, this is what we are saying, that more information will be beneficial.

10

MR CHRISTENSEN: Okay.

MS WRATT: Can I just explore that a little bit more, so what I am hearing you say is that if the assumption that the impacts on the environment and on fishing, and on tourism, are minimal, then you don't really have any disagreement with what has been presented particularly this morning by Dr Denne?

20

MR LJUBOWNIKOW: That is correct, yeah.

MS WRATT: Yep, but your concern is that you think there is still uncertainty around those other impacts on the environment of fisheries and et cetera?

25

MR WALTER: Yeah, there are some other economic uncertainties, and also in the model the assumption – the set off assumption is provided solely by TTR and apart from the iron this has not been vastly cross-examined, yeah, so for example different levels of operating expenditure if you spend and serve to propose 50 per cent of local companies, you only spend 25 per cent with local companies, what would the economic impact be then? And it would likely be less, but it would be useful to provide a view on that and say, okay, if you spend this amount of local companies, this would be a benefit, if it is - - -

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MS WRATT: Although if you are using only the tax and royalty as the economic benefit then that isn't going to be affected whether you spend with local companies, or not, is it?

40

MR WALTER: Yeah, that is correct.

MS WRATT: So, to me the main – I mean, yes, there are uncertainties around price, but the main uncertainty from a New Zealand anchor point of view it was around impacts on other industries and on the environment.

45

MR WALTER: The cost side of the equation.

MS WRATT: Yes, thank you.

5

[11.45 am]

MR ROGERS: Morning.

MR LJUBOWNIKOW: Good morning.

10

MR ROGERS: Could you just tell us a little bit about the NIWA study which valued the EEZ environmental services at \$184 billion per annum, please?

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MR LJUBOWNIKOW: We cited that in our original evidence – where is our evidence – and it was on their website, so actually, we do not have a lot of information about that study and I tried to go to the NIWA publications and tried to find that study to review it, but I couldn't, so it is only under their NIWA publication on "Water and Atmosphere – A Deeper Understanding", we have included the reference here.

20

MR ROGERS: Okay.

25

MR LJUBOWNIKOW: We don't know which modelling methodologies or what has been used, we are just presenting this figure that NIWA has presented and we are saying that if this figure is somewhere there and even a minor impact of this figure, you know, might be a non-minor impact in total terms.

30

MR ROGERS: Right.

MR LJUBOWNIKOW: But we are not ecologists, so we can't value these ecosystem services, that is not in our expertise.

35

MR ROGERS: So, if you take that, and I think the EEZ is about 4 million square kilometres, so that would then value the EEZ of about 45 thousand square kilometres per year, would you agree with that?

40

MR LJUBOWNIKOW: I don't know what they have taken as basis for this figure, if they have taken the EEZ, or if they have taken inshore of – this figure was on their website without a methodology of how they arrived at this figure, so it might be good to talk to NIWA and ask them about this figure.

45

MR ROGERS: Do you know who authors were of that? Is that in there?

MR LJUBOWNIKOW: No, as I said, it is only on their website.

MR ROGERS: But it doesn't have the authors?

5 MR LJUBOWNIKOW: It doesn't have the authors, it is - - -

MR ROGERS: So, it is an organisational publication?

10 MR LJUBOWNIKOW: An organisational publication, yes.

MR ROGERS: So, I suppose, given that it is NIWA, it will probably be more useful for me to ask TTR, who have done their work with them. Okay, all right, on that basis you don't know enough about that for me to continue any questions, so thank you.

15 MR LJUBOWNIKOW: Yes, I am sorry about that.

CHAIRPERSON: Thank you very much. Ms Jamieson, is Mr Witte here?

20 MS JAMIESON: Mr Witte is here.

CHAIRPERSON: Are you happy to make the start?

25 MS JAMIESON: Okay, I need to put away my other paper, can you give me about five minutes to organise my paper?

30 CHAIRPERSON: Sure, are you working on something else? No, I am happy to do that. Mr Beatson, or Mr Venus, when we opened this morning we talked about this order and the discussion and that there was going to be a conversation with Mr Venus and Mr Witte to sort some things, and has that happened?

MR BEATSON: Yes.

35 CHAIRPERSON: Great, okay.

MS JAMIESON: He is a planner so there has been lots of paperwork.

40 CHAIRPERSON: There is nothing like being prepared.

[11.50 am]

MS JAMIESON: Of course.

45 CHAIRPERSON: Thank you.

MS JAMIESON: Good morning. Mr Witte you have prepared a statement of evidence dated 24 February this year.

MR WITTE: I have.

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MS JAMIESON: And a summary of evidence dated the 13th of April this year and attached to that there was an appendix 1, isn't there? Now I am going to ask you to read out that summary, if you would, and then we will have a different way of addressing the appendix, if that is okay.

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MR WITTE: That is great, thank you.

MS JAMIESON: Thank you.

15

MR WITTE: My full name is Rodney David Witte, my qualifications and experience are set out in my statement of evidence 24th of February. I confirm I have read the Environment Court code of conduct, we will pass over that.

20

Three, this document is a summary of my statement of evidence to the extent necessary and it also updates my initial evidence in relation to conditions relating to matters raised in the submission lodged by the director general of conservation. In preparing this summary, I have considered matters relating to conditions arising from a joint witness statement of experts in the fields of sediment plume modelling, optical effects, marine mammals, seabirds and best ecology.

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30

I confirm I attended the hearing during the week of the 31st of March to the 3rd of April and I have read the transcript for those brief parts of the hearing where I was absent due to other commitments. I met with Dr Marie Brown, EDS and Mr Garry Venus of TTR on the 24th and 25th of March and signed a joint statement of experts in the field of mitigation hereafter I refer to that as a joint statement on conditions. And that was attached as appendix and also the attached appendix A. proposed conditions both dated the 25th of March.

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40

At the time of drafting this summary, the latest versions of conditions available to me was that attached to the joint witness statement on conditions and that is Appendix A dated the 25th of March, the 25th of March conditions. At this point, I should say that I received yesterday, midday, a revised set of conditions from Mr Venus and they are the 15th of April conditions. So things have moved on. I have had discussions with Mr Venus during the course of this hearing and indeed as early as this morning and subsequent email dialogue regarding the structure content and subject matter of conditions but at this time, we will just delete that, I do have a right set of conditions.

45

5 So I have made some annotations to 25th March so let us take it, in the
 absence of revised conditions, but I have made annotations to 25th of
 March conditions, because you will understand that is all I had when I
 wrote this, which I discuss in this summary and I have attached as
 appendix 1. Those annotations were developed in discussion with
 experts who have given evidence on behalf of the director general to
 the extent possible in the time available in earlier drafts of some of
 these provided, been provided to TTR.

10 The conditions refer to an environmental monitoring and management
 plan, an EEMP, and the most recent draft of the EEMP I have available
 to me, is attached to Mr Venus's evidence in chief of the 17th of
 February and I note that the contents of the EEMP were not reviewed
 15 in any detail at the caucusing. And perhaps if I could interpose there,
 what I received from Mr Venus yesterday does not include a revised
 EEMP so it is to the best of knowledge the EEMP that we have in front
 of us now is that 17th of February one.

20 So, turning now to the section on consent conditions, good practice
 under the RMA and relevance to EEZ, this is largely a summary of my
 evidence of the 24th of February.

[11.55 am]

25 A well-developed body in case law and practice is developed under
 The Resource Management Act 1991, hereafter the RMA, for the
 setting of conditions, and I consider those general principles are very
 useful for condition setting under the EEZ Act. For example, under the
 30 RMA various techniques are evolved as a means to manage the
 inherent tension between – and if we could, please, change that to
 “providing” rather than “proving”, spell check is sometimes not as
 helpful as it might be – flexibility to a consent holder to manage and
 modify the operation while still providing a legally certain and
 35 enforceable framework that establishes a level of consented effects.

The same issues of operational flexibility to manage effects on
 certainty and incomplete information also arise from a consideration in
 Marine consent applications and in the setting of conditions in the
 40 respect of them. And I observe that the EEZ Act non-exclusive
 definition of the term “adaptive management approach” – and that
 should be footnote “1”, rather than a large “1” – is consistent with the
 application of adaptive management methodology in the RMA,
 notwithstanding the term itself is not defined in that Act.

45

In my statement of evidence I agreed with Mr Venus that the relevant practice for the setting of RMA conditions as set out on the quality planning website should apply to conditions setting under the EEZ Act, and that approach was endorsed by Dr Brown in the joint witness statement on conditions set out the key principles listed on the quality planning website, that conditions must be within the consent authority's power to impose, for resource management purpose certain relevance of subject matter of the consent, fair, reasonable and practicable and exclusively between the consent holder and the consent authority, and I am sure they are well known to members of the Decision-making Committee.

My evidence also discuss the importance of clear, concisely worded conditions that need to avoid ambiguity both within and between conditions and the importance of structure in the overall suite of conditions, bearer discretion as reserved to another person and such, as an officer of the consent authority to approve a plan or document prepared subsequently.

The consent conditions relating to the requirements of that plan should not be open to interpretation. Based on the conditions alone the person exercising the discretion should be able to make a judgment whether the management plan fulfils the matter specified in the conditions and for that reason conditions should worded as subjectively as possible. Well, not only for that reason, but that is one of the reasons.

Now the purposes of conditions: Conditions conserve different broad purposes including defining the consent. For example, in this case, the lapse period, the project area, the volume and rate of extraction and the volume and rate of discharge – and to that I would add – and the characteristics of the discharge – directly control environmental effects, for example the acoustic control to mitigate the effect of underwater noise on marine mammals, on conditions to control environmental effects can also include those that specify the objectives and details of operational management plans and operational responses should identify parameters, or thresholds, be exceeded.

Conditions can also – another purpose to establish an adaptive management framework, if one is considered appropriate, and this includes: Ensuring there is good baseline information about the receiving environment, conditions providing for effective monitoring of adverse effects using appropriate indicators, thresholds seem to trigger remedial action before the effects become overly damaging and effects that may arise can be remedied before they become irreversible, and that is taken from the Board of Enquiry New Zealand King Salmon

decision and in my experience adaptive management regimes often also involve the preparation of management plans.

5 The fourth purpose of a condition, monitoring and reporting conditions may relate to any of the above conditions. Another purpose – provide a framework for technical oversight, in this instance, the technical peer review panel, the TPRG, iwi and community oversight effects and a sight of the consent and the roles and responsibilities of participants.

10 And conditions may also – another purpose is to set out administrative actions, such as recovery of costs, insurance, bonds and reviews.

15 Now the form and structure of a condition may vary according to its purpose; I will discuss some of the purposes of conditions in relation to the TTR proposal in more detail in the remainder of this summary, but the first though is one matter relating to conditions, that has arisen in the course of this hearing, that I will briefly address.

20 During the course of this hearing the phrase “red, orange and green limits” has gained currency and seems to have different meanings for different people. In particular, it seems to be, there has been some inconsistency in the use of the term “red light” and what reaching a red light limit would mean.

25 **[12.00 pm]**

30 The red/orange/green traffic light concept first entered the lexicon of this hearing in the joint witness statement of the benthic ecology experts who identified green as equalling okay; orange equalling assessed; and red to stop.

35 The conference of experts on conditions reviewed that joint witness statement (and that was available to us in a draft form only at that stage, it wasn’t finalised I think until a day after our caucusing concluded) and developed the concept further.

40 Having further considered the way in which the red/orange/green concept has been interpreted by some witnesses at this hearing I think some additional provisos are necessary.

45 The first is, the primary focus of condition setting should be to define the consented environmental effects and ideally this will be done at the consent stage, not subsequently. Where it is not appropriate to do this at the consent stage it should occur within a context of clear objectives and robust processes involving the EPA in an approval role.

It is not appropriate for the process to provide for the consent holder to unilaterally determine the content (**INDISTINCT 1.14**) related documents, including response thresholds – and I will discuss this issue in more detail later.

5

All conditions to the consent must be complied with. There is not some sort of hierarchy of mandatory and discretionary conditions. If an orange light measure requires further action (and monitoring has been suggested as an example during the course of this hearing) that action must be done. If it isn't done that will then become a compliance issue.

10

And finally, my third point would be not every red light quantitative measure will necessarily require an orange light threshold. For instance, a condition that aircraft serving the operation do not fly below 2,000 feet or 600 metres except when landing and taking off, in order to mitigate effects on marine mammals, does not require a separate trigger threshold to alert the consent holder to possible effects on marine mammals from flying at say 2,200 feet.

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Conditions defining the consent – A consent is a permission to do something that would otherwise not be allowed. A consent holder, in exercising the consent, and the consent authority (in this case the EPA) in administering it, need to know with some precision what the consent allows.

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Appendix A of the joint statement of the conditions experts proposes conditions relating to extraction and discharge volumes and rates, and you will find that at Condition 3 of Appendix A, which in turn is attached as Appendix 1 to my summary evidence.

30

I also consider it is important that there is similar certainty about the content of the discharge in relation in terms of the particle size distribution (the PSD) which will be released. It is clear from the evidence of the sediment plume experts that the PSD, together with the volume and location of the discharge, will be a significant determinant of the size and nature of the plume. And those matters, or these matters, have fundamentally informed the model from which other experts have assessed the effects.

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Now obviously there are other matters that affect the plume such as wind and current which are outside the control of TTR, the applicant in this case.

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Using TTR supplied figures and with the assistance of Dr Longdill, who outlined this type of condition in his supplementary evidence, I have drafted two alternative conditions to that effect which are set out

in track changes to Condition 2D of the 25 March conditions, Appendix 1 to this evidence.

5 And the first alternative defines scope, mass flow, discharge rates and finds content for each of the three discharges from the FSPO (**ph 4.00**) and that there (**ph 4.02**) the hydrocyclone overflow, the hydro and cyclone underflow, and the hyperbaric filter, while the second alternative combines all three discharges.

10 For technical conditions of this type where ongoing compliance is important I consider that it is important to include the monitoring and reporting duties of the consent holder by way of conditions within the consent, and I have – and if we could please change the words here and I have drafted a suggested condition to that effect in Appendix A with
15 the assistance of Dr Longdill. So that should read, “and I have drafted a suggested condition”.

I note that conditions of this type that require ongoing sampling, analyses and reporting to the consent authority at the consent holder’s
20 expense are not uncommon in RMA consents.

Monitoring and reporting of the discharge parameters will also address the following – adaptive management and the definition that the conditions expert accepted was a “learning by doing” one, requires
25 regular ongoing monitoring of many variables to help inform decision making on cause and effect while discounted variability due to natural processes.

[12.05 pm]

30 The more certainty there is about the discharge, the more reliable the judgements determining cause and effect when interpreting monitoring results will be.

35 The development and ongoing calibration and validation of a predictive sediment plume model is an integral part of the exercise of the consent and the assessment of environmental effects, and that comes from the sediment plume expert joint witness conference and the benthic experts also gave weight to that predictive model.

40 For the model to be an effective tool the inputs to it, such as sediment volumes and particle size distribution, need to be as constant as possible and need to accurately reflect the actual real world values. A regular ongoing monitoring can provide that level of constancy for the
45 model.

5 I should perhaps point out at this point – we will come to it shortly – there has been some closing of the gaps from the conditions that I received from Mr Venus and subsequent discussions this morning in terms of PSD and monitoring. There is still a little way to go but just for the committee’s benefit - - -

CHAIRPERSON: Thank you.

10 MR WITTE: - - - there is less daylight.

Conditions that directly control environmental effects – Conditions that directly control environmental effects can take two distinct forms.

15 The first are conditions where there is adequate knowledge of the subject matter in the performance standard and methods necessary to control the adverse environmental effect are well established. In this application an example of that type of condition are the acoustic controls to mitigate the effect of underwater noise on marine mammals.

20 The second type of condition that directly controls environmental effects involves subsequent management plans. And as noted above, management plans can fulfil different purposes in consent conditions.

25 One purpose is what I will refer to as operational management plans which serve to directly control environmental effects, and an example that is in the TTR context are the proposed spill contingency management plan and the biosecurity management plan. As I understand it the purpose of these plans is to set an operational response should an event occur that requires a response to mitigate the
30 environmental effect.

Management plans of this type can be prepared in the knowledge that at the time of consent there is sufficient understanding of the required and appropriate operational response.

35 Now, this should be a new paragraph. A further purpose of management plans is common in adaptive management regimes. In this situation management plans do not directly control effects but set out a process to assess if effects are acceptable in situations where at the time of consenting there is considerably less certainty about the
40 extent and severity of effects. Conditions relating to this type of management plan can be complex and case law under the RMA continues to evolve.

And of course one document can address both purposes of management plans. It may be in part an operational plan, in other parts it may be a type of plan more consistent with adaptive management.

5 The purpose and role of management plans was discussed in some detail at the expert conferencing on conditions and we agreed to the following statement – you would like me to read that?

CHAIRPERSON: Actually, yes, read it out. I think it's quite important.

10

MR WITTE: Yes, okay.

15

A management plan shall transparently set out how a consent holder should comply with consent conditions. They are operational documents and not a surrogate for enforceable conditions.

20

Conditions relating to both types of management plans discussed above will typically set out the objectives is to meet, require it to be prepared, set out a process for its approval and require it to be implemented.

25

In particular the objectives of the management plan should be clear, they should be certain and enforceable because it is those objectives that particularly inform the consent holder of what is expected of them when preparing the management plan, and those same objectives will be an important factor when the consent authority subsequently considers whether the management plan can be approved. And I've given some case law on that, I think it's the same case law as Mr Beatson (**ph 4.40**) quoted in his opening submissions.

30

I discussed the issues associated with the setting of clear objectives in the context of the TTR application in the following section of my evidence on adaptive management – establish an adaptive management framework if one is considered appropriate. So I'm working through the purposes of conditions here - - -

35

CHAIRPERSON: Mm'hm?

[12.10 pm]

40

MR WITTE: - - - and we're up to paragraph 26. It is noted above the EEZ Act specifically provides for an adaptive management approach to be incorporated into the conditions of a marine consent. The experts on conditions agreed on the following definition, and if we could just take the last phrase of adaptive management and put it under definition from the Environment Court and the committee will appreciate this was done late on a Sunday night, an experimental approach to management or

45

structured learning by doing. It is based on developing dynamic models in an attempt to make predictions or hypothesis about the impacts of alternative management of policies. Management learning and proceeds by systematic testing of these models rather than by random trial and error. Adaptive management is most useful when large complex ecological systems are being managed and management decisions cannot wait for final research results.

Adaptive management approach is often due, and that was accepted by the joint witnesses, but it comes from the Golden Bay Marine Farmers in Tasman, it was the agricultural inquiries, Judge Kenderdine way back in 2003. Adaptive management approach is often used where there is a high degree of uncertainty of knowledge of the existing environment and the effects of a proposal on that environment. And several of the joint witness statements of the experts identify the high level of uncertainty of knowledge of the existing environment.

Now at the time I drafted my evidence, the 24th of February, it was unclear to me whether TTR were proposing an adaptive management approach. During the course of this hearing it is clearer that some aspects of the proposal are to be managed adaptively. I therefore proceeded on the basis, although in the absence of detailed conditions particularly those relating to operational, I have then proceeded on that basis although in the absence of detailed conditions particularly those relating to operational responses I remain somewhat unclear as to exactly how the TTR adaptive management approach will apply in practice.

I note that TTR is not proposing a staged approach, either in time or space, whilst staging is not a mandatory requirement of adaptive management it is in my experience with development, in my experience development applications in the New Zealand marine environment have not uncommonly included staging as an integral part of the adaptive management approach where such an approach is relied on.

In my opinion, when staging is not contemplated a greater understanding of the likely effects of the proposal may be necessary before granting consent, the consent conditions may need to require more intensive monitoring to detect effects at an early stage and greater reliance may need to be placed on a predictive model during the operational phase to identify effects before they are observed.

And I consider a predictive model can be a useful tool for adaptive management. In particular, a predictive model well calibrated with real world data can be a valuable tool to assist decision makers and their technical advisors such as the proposed TPRG in forming a view

whether observed environmental effects are as a consequence of the consented activity or within the bounds of variability from natural processes.

5 To improve its functionality as a predictive call the model needs to be
constantly calibrated with real world monitoring results so that over
time it increasingly mimics the variability of the natural and elsewhere
in this suite of evidence, that has been called background by other
experts, so I have used that term interchangeably, natural background
10 environment.

CHAIRPERSON: Mr Witte, I will just stop you.

15 MR WITTE: Overall the TTR proposal seems to rely heavily on obtaining
detailed information of the existing environment on the base line
monitoring phase and using the information then obtained to set
quantitative environmental performance standards within future
management plans. Primarily, the EEMP but not solely the EEMP. A
number of experts expressed the opinion that it was not possible to set
20 quantitative conditions at this time and I think Dr Huber was amongst
those.

While quantitative standards are generally to be preferred in RMA
conditions, RMA practices recognise that it may not always be possible
25 to set those quantitative measures at the time of granting consent and
that further base line monitoring will be required. In such instances, the
objectives, the adaptive management process is being designed to
address become critical. Such objectives would also need to be
supported by a robust process to fill the gaps post granting of consent.

30

[12.15 pm]

I note the joint witness statements of the experts provide little guidance
as to what the objectives should be. As Dr McClary confirmed the
35 sessions he attended devoted little or no time to discussion of the
objectives for environmental monitoring of the benthic environment.
And if the Committee could please footnote, that can be found at the
transcript page 837.

40 And paragraph 34 the draft EMP attached Mr Venus' 17th of February
2014 evidence lists a set of environmental objectives by topic many of
which are expressed in subjective language. And these were carried
into schedule 1 of appendix A during conditions caucusing. And for
instance in respect of Rocky Reefs the two objectives at that time, and
45 are, no more than minor impact on Rocky Reef biodiversity due to

sediment deposition and no more than minor on Rocky Reef biodiversity due to light reduction.

5 Determining what is minor is difficult. At the time of the expert conferencing I considered that provided the relevant experts focussed on the objective or objectives, plural, they may be able to define and agree on what is a minor effect in respect of in this Rocky Reef and development compliance performance standards and management trigger values together with monitoring parameters to determine the ecological point at which minor becomes more than minor.

10 And regrettably and this ties back to Dr McClary's statement little progress was achieved in that regard during the subsequent conferencing or the hearing of experts.

15 I also agree that in some case qualitative objectives may be appropriate. That decision would need to be on an effect by effect basis considering factors such as the amount of information available, the degree of scientific and stakeholder agreement with the objectives, the extent to which the proposed monitoring framework will address effects, the duration of the activity causing the effect and the likely seriousness of the effect.

20 Turning now to conditions relating to monitoring and reporting. My initial evidence set out in some detail how in my opinion the quality planning website guidance that monitoring and reporting conditions must specify exactly what must be done, how and by when can be achieved in practice. I consider there needs to be a logical process as I've set out below and that's slightly different from my 24th of February evidence. And in my opinion the approach to monitoring and reporting should be in accordance with the sequence set out below.

25 I haven't been able to rework the 25th of March conditions to reflect that I'm going to pass over this next section. I really put it in front of the decision-making committee if you get to the point of drafting conditions I would just endorse you to perhaps look at this sequence and see whether that's helpful to you or not.

35 I'd now like to discuss the specific conditions within the scope of my brief of evidence, not already discussed above. In respect of benthic ecology I've attempted using the joint witness statement of the benthic ecology experts to set out in detail the monitoring to be undertaken with respect to benthic ecology and habitats and I've set that out as condition 101J.

45

5 Mr Venus in our dialogue during the week just gone discussed that he too has done that. There are some aspects, I don't discredit what Mr Venus has done, he's put it into the baseline monitoring. I think it should be carried over into operational monitoring, but we're pretty close on that, on detail.

10 But I will read here, I consider this level of detail is required to be set out in the conditions relating to the monitoring to be undertaken and the EMMP should then set out the methodology for undertaking that monitoring. And that approach is consistent with the yellow highlighted statement inserted by myself in the other conditions experts. And that was in appendix A to our joint witness statement, monitoring parameters yet to be established reliant on expert witness joint statement.

15 Now unfortunately the other joint witness statements do not seem to have addressed the issue of monitoring to the same extent as the benthic experts. So benthic experts went some way down the path. I don't find that in the other expert joint caucusing statements.

20 Now I've also suggested some amendments to conditions in relation to sea birds, but those are quite preliminary. I would have liked more time to work those through further.

25 **[12.20 pm]**

MS JAMIESON: Thank you Mr Witte. Now if you could just turn to appendix 1 to that brief that you've just read out. And if you could just read the notes that you've put at the beginning of that please.

30 MR WITTE: Yes thank you. These notes are quite important. So the first note is that the original base document and that's the black text are the agreed conditions attached to this appendix A to the joint witness statement of experts in the field of mitigation dated 25th of March.

35 I hope you do all have a coloured version don't you?

CHAIRPERSON: Yes we do.

40 MR WITTE: It's going to get difficult if it's not in colour. The yellow highlighting indicates matters identified as requiring more detail at the time of the expert conferencing. So that again is from the joint witness statement of the conditions experts of Dr Brown, Mr Venus and myself and Ms Cousins for CERA as an observer.

45

5 The tracked changes are suggested conditions or changes to wording conditions to address specific matters within the scope of my brief of evidence. And that relates to sediment flow modelling, effects on benthic ecology including the effects of sediment discharge, effects on seabirds and effects on marine mammals. And that's in the blue tracked changes.

10 An explanation for the suggested conditions and references to the origins are shown in the comments box and that's off on the right-hand margin in blue, and so they are my comments. In some cases informed by the experts called by the Director General. They might be in pink in yours. They're blue on mine.

15 And tracked changes have caused some problem in numbering and cross referencing. So when I tried to attempt to do that it all got quite unstable.

20 MS JAMIESON: Do you want to read the next bit? If you could read the next bit please too?

MR WITTE: Yes okay. Now these changes address matters to the extent I have technical information to inform them. Limits to the changes proposed are discussed in my summary evidence.

25 MS JAMIESON: Thank you. Now rather than going through this document in detail which would be nigh on impossible, I think it would be useful to turn to what is schedule 1 of this document. And this as you've explained in your evidence is from – the base document is the joint witness statement but this is where various objectives are given. And if
30 you'd like please to explain to the committee your understanding of how this table was supposed to work and indeed fill in that gap please.

35 MR WITTE: Yes thank you. This table which was developed and discussed during the caucusing of the experts on conditions, mitigation caucusing, at that time I expressed some concern, it's not reflected in the joint witness statement, about the subjectivity of a number of these objectives but I had hoped, and you'll find this in the joint witness statement, that for subsequent expert presentation of evidence in the week of the 31st of March, that week when you heard from the experts,
40 that the experts may make some progress in terms of putting some, for want of a better word, some numbers alongside this which could then start to inform and tie back to the objectives.

And that was my expectation in terms of I thought the table might be helpful to assist that process. And indeed you'll find that in the joint witness statement. I think we suggested to the decision-making committee that that might be something you might like to consider.

5

MS JAMIESON: Thank you and I said earlier that I'd ask you to comment on your understanding of the progress that has been made in discussions. You've actually helpfully done that to a large extent as you've progressed through the thing. Rather than focussing on any matters of detail is there anything else you need to add to do that? Or is it adequately covered by your comments?

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[12.25 pm]

MR WITTE: Look, I think it's going to be important that Mr Venus and I go away and bring back to the committee a version that brings together our two tracked changes. It hasn't been possible to do that literally in the last 24 hours. But I would say this to the decision-making committee in respect of marine mammals we are there. I think we can reach agreement. I do need to say though that there is one marine mammal expert, Associate Professor Slooten, who does not agree with those conditions but Mr Baxter has led discussion there with marine mammal experts and I'm informed by him as late as this morning that – subject to some very minor matters of wording, it's largely agreed.

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25

In terms of PSD as I said earlier I think the gaps is less, is closer, but we still need some further discussion there and I think there may need to be some obtaining advice from the relevant sediment plume experts. We work through that. There are some other - - -

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MS JAMIESON: I don't think you need to go through the detail.

MR WITTE: They're the substantive matters.

MS JAMIESON: Yes. But would it be correct to say that there remains a difference of opinion between yourself and Mr Venus about the details and the form of the adaptive management process and you'd like to comment on that.

35

MR WITTE: Yes correct. Particularly around the expression of objectives and some detail in terms of the process of the development of subsequent management plans.

40

MS JAMIESON: Okay. If you could answer any questions please.

45

MR WITTE: There's just one other point perhaps just before we move to that. I do support the structure that Mr Venus has now in his conditions. In fact that was one he and I discussed of general preoperational and operational. Unfortunately for the decision-making committee and myself that actually confuses things because by restructuring the conditions we lose this previous sequence.

CHAIRPERSON: That became evident when I was reading it. Mr Beatson are you going to – or Mr Rennie? Mr Beatson, thank you.

MR BEATSON: Dealing first with your comments in your evidence and your further statement in relation to the conditions around your desire for quantitative values. I think we all agree that if we could have some of those that would be the ideal situation but I assume your reasonably realistic and pragmatic about the fact that that just hasn't eventuated and I think the Department's own witness on benthic ecology said, Ms Hillock, that she didn't think there's sufficient information to set trigger levels at this stage, and Dr Huber went into quite some detail about why he thought it would be scientifically improper just to snatch at values. So do you accept that we have to work with what we've got and work forward on that basis?

MR WITTE: I accept that what we've got is what we've got. I think it's probably unfortunate that the information available at the time the application was lodged perhaps hadn't addressed that in more detail. I think it's unfortunate that the experts in their caucusing haven't been directed to the objectives to try and make some more progress. But I do accept we are – or to use the chair's words we are where we are.

MR BEATSON: And were you here when Dr Huber gave his evidence?

MR WITTE: Yes I was.

MR BEATSON: He was quite clear about the difference between the stages of a process like this in terms of assessing likely effects and the additional and far more detailed work that's required when you get down to setting trigger values for management. And he indicated they're two different steps. You don't necessarily need the same information to assess effects as you do to establish a site specific trigger value for a given parameter. Do you recall him saying that?

[12.30 pm]

MR WITTE: Yes, I do. I think we need to differentiate though between objectives and triggers. Objectives are what in my view should be expressed in the conditions; triggers I believe can be set later.

MR BEATSON: Okay, thank you for that. Now just in terms of the objectives, the qualitative approach that has been proposed by the applicant here, and for example, the descriptor of the effects that are to – the effects and outcomes that are to be achieved, and for example that there be minor effects on values at specified receptors – do you accept that that type of terminology has been improved by the Environment Court in the RMA context on previous occasions?

10 MR WITTE: I have to say I haven't, in my experience, come across that. I have, as part of preparing my evidence I have looked closely at decisions such as Crest (Crest Energy). I don't find the use of the term in there.

15 I've looked at the New Zealand King Salmon Board of Inquiry decision, I've looked at it – in fact that was a case I was very closely involved with, and I don't find the use of the term in there, in the objectives.

20 I will accept that from time to time the Environment Court may have done that but in terms of adaptive management decisions which I am familiar with I have struggled to find the term as a statement defining objectives, and particularly if I could say this, to the extent which it is now proposed in the TTR set of conditions where there are subjective terms on most of the proposed objectives.

25 MR BEATSON: All right. So I take it then that you didn't pick up on the passage from Crest where the court said that the reference to "minor" as an objective was well understood in the RMA context and capable of ascertainment by a panel of experts?

MR WITTE: Could you refer me to – was that the interim decision of Crest? I have the final decision of Crest and that's what I'm relying on.

35 MR BEATSON: Look, it might be a matter for submission. We will come back with that reference and a range of others where this approach has been adopted for the benefit of the panel in our closing submissions I think.

40 MR WITTE: Well can I just say what I have relied on is the final decision of Crest, and the final decision of Crest (for the benefit of the decision making committee), there the Environment Court insisted upon a final copy of the environmental management plan.

45

5 In fact it was a year in the making of that plan, all of 2010, and when I look at that the objectives that are set out in the environmental management plan for Crest (and they can be found at Section 3 for those who are interested, in the environmental monitoring plan, which was attached to the Environment Court decision) and none of those contain any subjective or qualitative objectives.

MR BEATSON: Well as I said, I'll be coming back to the panel.

10 MR WITTE: Well the benthic habitat, no change in benthic habitat attributed to the project at a distance greater than 30 metres from any turbine. "No", is measurable.

15 MR BEATSON: Well, "no" may be appropriate in the context of that case and what was put up and able to be achieved but we are talking about something different here, aren't we?

MR WITTE: No, but I don't want to get into an argument, but you have put to me that Crest accepted the word, "minor" but I don't find the word "minor".
20

MR BEATSON: That's all right, you've said you didn't find it and I've said that we will put it forward for the panel.

25 MR WITTE: Thank you.

MR BEATSON: Now, do you also accept that we are proposing to put forward the detail of those plans when they are in a position to be presented, and following independent review, to the EPA for approval?
30

MR WITTE: Yes, I do accept that.

MR BEATSON: Yes.

35 MR WITTE: It is the process by which that approval happens which I have some concerns about, and that is set out in my evidence in terms of where I referred the decision making committee to that process section that I skipped over.

40 I think unfortunately a process which does it outside of this hearing process means that submitters such as the Director General of Conservation don't have an opportunity to comment on those management plans except if the condition (such as a marine mammals one) specifies that there shall be such consultation.
45

That's the difficulty I have with the process outside the decision making process – the consenting process.

[12.35 pm]

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MR BEATSON: But you're aware that the panel is going to comprise a range of experts including experts appointed in consultation with the Department and other interested agencies, aren't you?

10 MR WITTE: Yes, I'm aware of that.

MR BEATSON: Yes. Now, do you accept that the conditions, as worded, require the objectives to be met?

15 MR WITTE: Yes, they do, but conditions need to be enforceable and to be enforceable they need to be certain, and I think there are difficulties with words such as moderate and minor and significant in terms of their enforceability.

20 MR BEATSON: But the – okay. I think we may be talking at cross purposes because the entire intent of the monitoring and ongoing operational framework that is to be developed, and which I think all the experts agreed should be developed but could not be specified at this point, is to enable as much certainty as can be arrived at to set trigger values and
25 values to ensure that those objectives are met. Now, do you accept that?

MR WITTE: I accept that there will be a subsequent process to develop the management plans, the thresholds and the thresholds to them - - -

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MR BEATSON: Yes.

MR WITTE: - - - or the triggers.

35 MR BEATSON: And the whole point of that process is to ensure that the objectives that we are setting out here are met, isn't it?

MR WITTE: Yes, but this becomes then the circular argument. If the objectives aren't specific and we don't know what is the objective then
40 it is left to some subjective judgement of, A) the people who are drafting the plan (what is the purpose, what are they trying to achieve?) and then secondly, in this sequence the technical peer review panel (what is meant by this?) and then the EPA (which at the end of the day needs to approve that plan). And it will all turn on subjective terms,
45 and that is where I have some difficulty.

Now, I accept that at this stage of the process it's going to be very difficult to pin down what those terms are but I am trying to apply RMA practice here, which would say that those terms should be quantified if it is possible.

5

MR BEATSON: Okay, and I think we've all got to the point where we accept that it's not possible at this point, haven't we?

MR WITTE: Yes, we have.

10

MR BEATSON: Including the Department's own witnesses.

Now, apart from that issue when you provided your summary of where we are at following the discussions you have had with Mr Venus it appeared that there was really only one issue of core concern, apart from massaging around the words, and that is the difference between the Department (Dr Longdill in particular) and the applicant on the PSD parameters.

15

Now I'm not sure, and I think Ms Jamieson signalled that further discussions would be helpful – I'm not sure that we are going to benefit from having a discussion between Mr Witte and myself about what those suitable parameters are but we are certainly – my understanding is there is very little between us on what those parameters might look like and we are very open to ongoing discussion about that.

20

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Hopefully we will close the gap but I will get Mr Venus to outline where TTR is at and what the nature of those differences are, but I'm not sure having a debate with Mr Witte is going to get us any closer to resolution of those issues.

30

Is the panel happy for us to continue discussions and report back on the outcome of those?

CHAIRPERSON: Yes, is the short answer. I think what we've said all the way along – if the Department is happy for Mr Witte to do that. As we said, at the end of this - Ms Jamieson, you want to make a comment?

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MS JAMIESON: Of course - - -

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CHAIRPERSON: And I think they are ongoing and I am very happy for them to be ongoing.

MS JAMIESON: Of course the Department is happy to continue discussions. I do have some points that I want to make with the committee this afternoon in respect of this issue because I do think it is important that the issue is clearly stated and understood by the committee at this point.

5

And that is not to cast any aspersions or anything on the likelihood or otherwise of the Department and TTR reaching agreement about the PSD matter, but I am a little concerned if nothing is put on the table at this point, that we leave a little bit of a vacuum in that respect.

10

So I just wanted to forewarn, and I've told my friend this, that I do have just a few questions of Mr Venus in relation to PSD that I don't wish to defer to a later discussion. They are simply clarification matters – well, mainly - that's the nature of them.

15

[12.40 pm]

CHAIRPERSON: Thank you for that, and we will come to questioning of Mr Witte and to Mr Venus. And one of the reasons I wanted or we wanted Mr Witte to go ahead now and then for Mr Venus, because some of the things that Mr Witte has raised we'd like to put questions to Mr Venus and this might be a situation where it might be useful to have both the witnesses here so we can at least clarify as far as possible where we are at. Hence I saw, it was a sort of discussion and questioning between the parties.

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MS JAMIESON: Certainly. I am mindful that this is the opportunity as Mr Beatson has raised these matters of principle and approach that otherwise may not be aired until so late they are unhelpful.

25

CHAIRPERSON: Right.

MS JAMIESON: That's my concern.

CHAIRPERSON: Okay. So, Mr Beatson, have you got further questions of Mr Witte?

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MR BEATSON: I've got some other minor questions but just on that PSD point I would like to – it seems that my friend's concern is that something is on the table and doesn't disappear into a vacuum.

35

I'm happy to confirm that TTR is in general terms happy with the Department's PSD condition with alternative wording set out on page -

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CHAIRPERSON: Are these the ones at 3 of Mr Witte's alternative wording?

MR BEATSON: Yes, but subject to some minor changes to the detail and also
5 in terms of the timeframe over which those parameters are to be
achieved, and that is because we are looking for a sort medium term
average as opposed to an instant value type approach and I think there's
a bit of disagreement about exactly what that average period should be.
But in general terms I think we're getting very close. So I just wanted -
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CHAIRPERSON: Okay, yes. Right.

MR BEATSON: - - - for my friend to be comfortable that that is not coming
back off the table or anything like that.

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MS JAMIESON: Thank you, Mr Beatson, for that assurance. Look, these are
precisely the matters I wanted to cover this afternoon. I think it is
important that the decision making committee hears that short line of
questioning, so I'd like to that this afternoon.

20

CHAIRPERSON: Be happy to, thank you. Mr Beatson, the rest - - -

MR BEATSON: Yes. I think we've covered most of the headline issues
because as I say, despite some of the tone and the length of the material
25 you have put forward is actually very little that is different between us.

There is reference to staging in your paragraph 29. Now, do you accept
that in this particular case where there is a very substantial up front
capital investment required to get mining underway that staging is not
30 possible?

MR WITTE: I accept that TTR is not proposing staging. I'm not privy to
corporate boardroom affairs of TTR and it would be quite improper if I
was, but I accept that TTR is not proposing staging.

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MR BEATSON: All right. I don't think there's anything else left between us
really to discuss apart from those ongoing discussions and some
technical detail so perhaps I will leave it at that, sir.

40 CHAIRPERSON: Thank you very much.

MR WITTE: Thank you.

MS JAMIESON: I just have - - -
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MR CURRIE: I have one point, sir. Not a question of the witness but you did mention the Marine Mammal Act and you mentioned that one expert cannot agree, and I was suggesting perhaps it may be helpful to the committee if Ms Slooten was to be available either in person or by video link to explain her reservations or to be questioned by the committee.

MR CHRISTENSEN: Did she file a document explaining that?

MR CURRIE: I am not sure exactly where they are at, sir. I think there is, as far as I understand, some discussions are still ongoing.

MR CHRISTENSEN: There has been one document I think.

MR CURRIE: Yes, but there is also – there are a number of different conditions. Some are on noise and then there is a suite of broader conditions which are being discussed as far as I understand.

CHAIRPERSON: Ms Jamieson?

MS JAMIESON: So my understanding is that the one on noise has been filed and - - -

CHAIRPERSON: Yes.

[12.45 pm]

MS JAMIESON: - - - and Associate Professor Slooten's position on that is recorded, and you have that. The other one, covers the other matters, and is not finished yet, they are still talking about it, so you do not have that yet. You have what it might look like, to a degree, from the point of view of the Director General in Mr Witte's evidence. But as of yesterday they were still working on that. To be clear it looks as though they are getting closer but they were still, the email asks that they were still circulating for comment.

MR CHRISTENSEN: And as I understand it, Professor Slooten is not proposing an alternative condition in relation to noise. She is just saying, I do not agree that, a noise condition is appropriate.

MR CURRIE: I think she had a number of issues with the noise condition that was proposed and she did not agree with the noise condition that was proposed is the best way to put it, I think, yes. And she gave her reasons for that and a lot of it was around a hundred and thirty db, but I don't think we need to go into that now. But the bigger point is that I heard that the witness has commented about marine mammals and so I

5 thought I would offer her availability to discuss that. It is not that she is being difficult or anything she has professional difficulties with, as I understand it, with the conditions being proposed and I think and it may be helpful for her to give her reasons for that. If the committee is minded to evaluate these conditions.

MR CHRISTENSEN: Well it sounds like on the non-noise aspects, that is still to play out. We do not know where that is going to land. We will see.

10 MR CURRIE: Yes, correct.

CHAIRPERSON: And just to remind the parties that one of the reasons we were enabling further comment once we have got the further officer's report and the conditions that the other parties will be able to make comment on any suite of conditions or any other part or the part, basically the parties has come up with and what TTR will come up with. So the comment, there is an opportunity still available and we will be putting up that direction. The specific directions fairly clearly, fairly soon on that. So this is not the end of it.

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MS JAMIESON: I have one short matter, re-examination, if I, is that the right time?

CHAIRPERSON: Yes, sure, yes.

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MS JAMIESON: Mr Witte, you had a discussion with Mr Beatson about certainty and trigger levels and possibility, now, I think your evidence is, is it not, that there are a number of stages in adaptive management process, isn't it. You have got an objective process and trigger settings, and monitoring that together comprise an adaptive management process. Is it your evidence that the same issues of possibility and desirability have been, those comments have been made with respect to both the triggers and the objectives to the same level?

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35 MR WITTE: Yes, I think that.

CHAIRPERSON: Can you rephrase that question please?

MS JAMIESON: So we have heard lots of evidence and you have reported on that, that it is not possible at this moment to set qualitative trigger levels. Is it your view that all ends have been exhausted to set more precise objectives for an adaptive management process?

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MR WITTE: That all has been exhausted?

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MS JAMIESON: That all efforts have been exhausted.

MR WITTE: Yes, it is my view that, well the effort in the course of this hearing, so far, would I think despite the best attempts have probably been exhausted but the hearing is not over. I mean, there would still be opportunities, it seems to me, if the decision making committee was to want to get the experts to try and close the gaps.

MS JAMIESON: Okay, thank you.

MR CHRISTENSEN: Mr Witte, I haven't studied the Crest energy series of decisions in detail and I am looking forward to hearing what counsel will say to us about those. But one of the things that has interested me is around the process and you might have some comments about this, as a planner. As I understand the Crest decision there was an interim position reached by the court in that case where they decided that they thought it was likely that they would be able to make a recommendation to the minister in respect of the restricted coastal activity that was being proposed but were unable to finalise such a recommendation because of uncertainties that remained around effects and the way that they ought to be managed. And that they asked the applicant and the other parties to go away and do some more work and to come back, and as I think you said that took a year or something of that order for that to happen.

[12.50 pm]

I am interested in that because if those things have all got the same tune as we are talking about here, but one of the things that troubles me is that this is not The Environment Court and we have a decision to make by a certain date. Can you think of a way that a similar result could be achieved when this Decision-making Committee is required to make a final decision?

MR WITTE: That is a tricky question, isn't it? You are quite right, my reading of the Crest decision is that there was an interim decision and the court directed the parties in effect of by looking at the final decision, I will just read that, this is paragraph 7.

“And by the time we delivered our Interim Decision there were a number of crucial issues remaining unanswered. We catalogued these towards the end of the decision. Key amongst them were that the EMP should be finalised for consideration by us in the course of deciding whether to grant consent, rather than being left for approval by a delegated officer of the respondent”. And that is my point that the EMP in this case needs to be before you.

5 “We are particularly concerned that the EMP, if it was to provide a suitable platform for consents, should robustly offer a programme of adaptive management, the concept of which had been developed in a number of decisions that we cited at page 51” and that principally is the Waitake decisions. That is the background, the context of Crest.

10 How you and you short time frames can do that, it was a suggestion I put out to Ms Jamieson, but whether that is possible or not to then ask the relevant experts to try and see if they can pin down what this meant by some of these qualitative terms. I accept though what Dr Huber says, it is not as simple as an afternoon’s work, I think was the term he said, and in the end of the day it really comes back to the quality of information that was provided in the first instance in the application and how that has been developed through the course of the hearing.
15 And if the initial foundations or the initial information has worked us through to the extent then I am not sure how you take it further.

CHAIRPERSON: Can I ask you a follow-up question, before I put you to others, and I am asking this fairly broadly, because the same I will put
20 to Mr Venus and he may well have thought about this, and it is this issue that you talk about this other process, so if consent were granted the way that Mr Venus has put together in his other set of conditions, because what I have tried to do is try to read across your suggested conditions and his overnight and it appears that the actual trigger values, and I think it has been accepted that the trigger values will not
25 be able to be established in terms of actual numbers and in the joint witness statement I think it was envisaged that it might be able to be done and I think that has been shown that it probably can’t be done.

30 So, if consent were granted without them in a way the conditions are put together it seems like the objectives which have been worked on and put into Mr Venus’s draft set and then there will be this pre-operation monitoring and some process will be undertaken to determine the trigger values, and that will be done in consultation with the
35 technical review group and others and then – and if I am reading it correctly, and I think this is what Mr Beatson said – the EPA will certify or decide those trigger values.

40 Is it your concern that – and you are saying back to outside of this process – it is the EPA that decides it, and not the Decision-making Committee, so effectively we would be asked to grant a consent in terms of, so effectively an envelope, and then another process, which will be gone through, to ultimately determine the trigger values?

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[12.55 pm]

MR WITTE: Is that second process taking place outside of the context of this decision-making which concerns me apply RMA criteria, or RMA
5 probe good practice, so the difficulty I would have is that the objectives, if they are continuing to be expressed in qualitative terms will inform the drafting of a subsequent management plan and then when the EPA comes to – and I have used the word “approve”, rather than “certify”, and we could discuss why, if you like – come to approve
10 it, then they have to approve it in terms of the decision that you, if you get to that point, as the Decision-making Committee made, and that will be the objectives, it won’t be threshold of trigger values.

15 You will set out a process – I imagine that would be part of the conditions, but it is really the essence is what is the objective, what are trying to achieve through these management plans, so if that is not expressive of clarity then a lot of what had been followed isn’t sitting on a firm foundation, it seems to me.

20 CHAIRPERSON: So, is it your advice to us, that if we were to grant consent on that basis, the objectives need to be much more – what is the word-clear, because in the way they’re drafted it does talk about “moderate” or “no more than minor”, is it your view the objectives need to be much more explicit or much more directive?

25 MR WITTE: That would be my preference and that is my experience.

CHAIRPERSON: Thank you, that is clear to me, thank you and we will discuss that with Mr Venus later.

30 MS WRATT: Can I explore that one a little bit more, and I think we sort of – there is an answer been floating around, but while the key question seems to be whether it is possible to get more specificity into the objectives from the experts and Mr Witte, you sat in on some of those
35 joint witnessing sessions and my question is do you think it is actually feasible to do that, or are we just at a stage where the information is just not there and the experts aren’t in a position to be able to say more specifically what those objectives should be, you know, without going to trigger levels, obviously?

40 MR WITTE: Well, unfortunately, I was overseas during the week of the expert caucusing and I only attended one of them, that was part 2 of the benthic experts, and I would note that the benthic experts probably made more progress – and I am not saying that that was because I was
45 there, but they did make more progress than the other experts, so I think, I really don’t know, but I do think it is probably worth

5 considering, if they were given some clear mandate or direction, or facilitation it may be able to be done by email as Mr Baxter has been able to do with the marine mammal – and not just him – and in terms of the noise condition – I just also need to qualify – I am not saying that – as I said in my evidence, the ideal is quantitative objectives.

10 There is one objective that is in the set of objectives which I don't have too much problem with, even though it is qualitative, and this perhaps may go some way to answering your question. If we look at the objective from Mr Venus that is - - -

CHAIRPERSON: Mr Witte, are you looking at his latest version, or - - -

15 MR WITTE: Yes, I am looking at his latest version and I am looking at the objective there and this may help you, I am not sure.

CHAIRPERSON: And by the latest version you mean the 15th of April?

20 MR WITTE: Yes, correct. And if we look at Mr Venus's – it is in condition 9(i) rather "Marine Mammal Protection from Vessel Strikes", this may be another approach you may consider but it is still – I think we are a little way away from achieving those – and that is "Marine Mammal Protection from Vessel Strikes" or "Practicable Steps Taken to Avoid Vessel Strikes with Marine Mammals", are you with me?

25 It is Mr Venus's 15th of - - -

CHAIRPERSON: Mr Venus has provided a summary statement - - -

30 MR WITTE: - - - it is the 15th of April, Appendix A to Mr Venus's - - -

MS WRATT: 14th of April.

[1.00 pm]

35 MR WITTE: So, we are on the same page, if it were? So I am looking here at Mr Venus's condition 9, it is under the heading "Environmental Performance Objective", page 4, it is over the page i "Marine Mammal Protection from Vessel Strikes". Now the objective "all practicable steps taken to avoid vessel strikes with marine mammals" is a qualitative objective.

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45 But I don't have a problem with that as a qualitative objective, because it is supported by some quite detailed conditions which – as I have indicated – TTR and the Director General have largely reached agreement on in terms of marine mammal observers on board, in terms

of what happens, keeping a log of marine mammal observations and some operational practices, which are set out in the conditions.

5 So, as I have said in my evidence, I think that you can have qualitative objectives in that context, if they are framed within the consent itself.

10 And that is not resulting from my overall point that I think overall, the totality of the objectives, when you look at them, are somewhat more qualitative than what I would expect, if this were a resource consent application.

15 MS WRATT: Yeah, I do have one other question, actually, it is slightly different. In your evidence, Mr Witte, you have got both the appendix with this sort of written information and then you still have got the schedule, which has a table.

MR WITTE: Yes.

20 MS WRATT: Whereas in Mr Venus's evidence the table is gone, do you think in the conditions there needs to be both the text and the table, or you are just using the table at this stage as a way of I guess summarising or presenting information?

25 MR WITTE: No, I have used the table as a summary, it was really developed as an aid to me widely (**ph 2.15**), only just to assist the process. At caucusing we thought it might be useful to assist a process during the decision-making, unfortunately it hasn't been used in that context, so no, I am not wedded to the table being attached to the conditions. I think it is useful, but I don't think it is critical to the structure of the
30 conditions sort of, really.

35 MS WRATT: Okay, so it could be useful, now if you were monitoring compliance having that table could well be useful, but the essence of the conditions is the text? Okay, thank you.

40 MR CHRISTENSEN: I will have another go, Mr Witte, I thought of another question I need to ask you. A lot depends upon the plume, it seems from the evidence, and what constitutes the plume depends a lot on what is discharged from the operation and so I can understand why from your perspective, and it seems that TTR is coming to the party as well, some controls or limits around the actual discharge would provide from a planner's perspective a great deal more confidence in the expected environmental effects, do you agree with that as a general
45 proposition?

MR WITTE: Yes, I do, I would actually make it more fundamental than that. I think the description of the characteristics of the discharge actually describes the applications, I think it describes it in just the same way as the application is to extract more than 8,000 tonnes an hour, or
5 whatever the number is, I think if it is in that context, so it is effectively what the consent is, so it is more than a condition controlling it, it is actually a description of what has been consented.

MR CHRISTENSEN: Do you take the view that the greater the specificity or
10 the control on the – let’s call it the discharge, the less concerned we are about the lack of quantitative numbers in terms of effects in the receiving environment at this stage?

MR WITTE: Yes, that is an interesting discussion, isn’t it? There is clearly a
15 relationship between the characteristics of the plume and the PSD, as we saw from Dr Hadfield’s model, when you change some numbers you can have quite a difference in terms of what the ultimate effects are.

20 **[1.05 pm]**

I think the two have to go hand in hand, I think you do need to monitor
the environmental effects because, again, I – you know the model is
25 only as good as the model is, so the model will need to be calibrated and validated by real world monitoring.

And so we have relied on the sediment plume model to tell us what the
effects are likely to be in respect of the plume and then the experts have
used that to inform their opinions in terms of what the environmental
30 effects would be, and so I think it is important as part of the description of the application to ensure that what is before you, in terms of the discharges, in terms of their particle size and the rates of deposition are constant, I have said that in my evidence, but I don’t think that is a substitute for monitoring in the real world. Does that answer your
35 question?

MR CHRISTENSEN: Okay, yes it does, but I want to pursue that even further
with you. So, if we think about the plume model, I recall the evidence, I
40 think it was Dr Huber, in relation to that, is that possibly the only thing we can guarantee about the model is that it will be wrong in terms of reality, because it is just a model. And he cautioned us against it applying a backward looking understanding of environmental effects, but do you agree that at the moment the model with the inputs of the particle size distribution is the best information that we have as to the
45 likely nature of the plume?

MR WITTE: Yes, I agree with that, but can I just make another couple of points, perhaps. I have relied, as have the other experts, quite heavily on that decision of the Tasman Bay Aquaculture of adaptive management which relies on the predictive model and testing hypotheses. And so while the model may not be fully calibrated at this stage, I do agree with the condition that the model should continue in existence, it should continue in existence with a time frame of the operation and it should over time become to more and more accurately mimic the natural environment.

And there is another reason I say that and that is that the benthic experts indicated in their joint witness statement and I think I heard this from Dr Tara Anderson, it is extremely difficult to do real world monitoring, particularly of the benthic ecology and for that reason those experts suggested monitoring six-monthly interval, I think it was winter-summer autumn-spring. And it is a very long time sequence to detect change and so I think that the TPRG, who will eventually make that informed judgement, technical peer review panel, if they have got a model they can have confidence in, just been calibrated with real world data and I think it is important that the one constant in that model is particle size distribution and the rates go into it and I think you should be varying that, but if you can be calibrating it with real world monitoring data, then I think you can use that to help and form, not solely make the decision based on the model, but you put the two things together and apply some expert judgement in terms of, are these observed effects a consequence of the mining operation or something else. Does that help?

MR CHRISTENSEN: Yes, it does, I still haven't finished with you yet though, because the process that you just described can only take place once the activity is commenced, in other words, to get the real time data as to what is going on in the environment with the mining operation in place, the mining operation has to be in place? You don't even need to answer that question because it follows as a matter of logic.

MR WITTE: Yes.

MR CHRISTENSEN: What I understand is being proposed is a process prior to mining of securing a better understanding of the baseline. It won't tell us anything at all about how the mining operation and plume perform, correct?

MR WITTE: No, it won't, but it can be used to calibrate the plume model in terms of getting better information and I accept there is a 20 year sequence in there now, but there is two years of baseline monitoring that will give us good information – well I think it will give better

information in terms of plume characteristics, tide, wind currents, those sorts of things, but I totally agree, in terms of the sediment in the plume, it is not going to provide anything until mining starts.

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[1.10 pm]

MR CHRISTENSEN: So, where I am getting to is going back now right to the fundamental challenge that you see, which is that at the moment we do not know what any numbers should be, so it would seem, the best numbers that we have the model output numbers and would they be a, in any way, a suitable source of information to obtain quantitative compliance values based on the information that is currently available.

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MR WITTE: Yes, I have thought about that. There are some numbers out there, I mean you have got Mr Pinkerton's number in terms of optics, you do have some estimates from Dr Hadfield in terms of deposition rates. The difficulty with that is, is what Dr Huber expressed that they may or may not represent real world conditions. They may set false triggers was I think the term he used. I think, if you are doing down that path, you may want to provide for a review provision so that as more information became available it would signal a review of the conditions. There is one problem compared with problem, different under the EEC compared with the RMA and that is the applicant cannot trigger a review. There is no equivalent to section 127 so whether that creates a problem, I do not know, but it, there are numbers floating around, how representative they are of the real world, I do not know. But if you accept that you need quantitative numbers there are some that have come through in evidence based on the model.

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CHAIRPERSON: Actually I just, just two, well one quick question. Do you see a difference between caution, which is what the Act says, and precautionary?

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MR WITTE: Have to turn my mind to that. But off the top of my head, no.

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CHAIRPERSON: Just flipping back to that issue of review, about review conditions, I mean there are review condition provisions in this legislation, and I do not know whether you are familiar with them or had a look at them, section 76. It is not the same but similar to what is in the RMA, if I am reading that correctly. Can you offer us any advice on where you see that as an appropriate mechanism to may be get more specificity down the track.

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MR WITTE: I am not going to give a legal opinion here. It is not my role. I did, I have considered that as a, and sometimes you do see it in RMA conditions, where the condition itself specifies that a review may be

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undertaken in the following circumstances. So it is actually set out as a condition or in other cases, as an advice note. I have not taken that much further but it did occur to me when I was thinking through these issues how that might evolve, I guess, as a matter of legal submission.

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CHAIRPERSON: Thank you.

MR WITTE: Can I just say, there was one point, we started to discuss approve and certifies, is that worth a discussion or not?

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CHAIRPERSON: So yes. So that was related to my question about how the trigger levels would be established and the way it come back, the EPA, I think the way, I am not sure whether Mr Beard (**INDISTINCT 4.02**) has framed it but you were saying that the EPA would have approve that as opposed to certify it so hence the EPA would need to be satisfied with them and approve them as opposed to taking them from TTR and suitably certifying that they are correct or that they are okay.

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MR WITTE: Yes, Mr Venus has used the word certified throughout, I think there are times when the word approved is a better one. In my mind, approved implies an assessment. It implies some rigour being brought to the process whereas the word certified to me is more of a perfunctory technical exercise. I might be wrong. I know the Environment court journal prefers certified. I think when it comes to matters where some rigour is required, such as approval and I use that word in that sense of the management plans and the EEMP, I think that is appropriate, I think certification for some of the more straightforward technical matters, receipt of a document that sort of thing, certify receipt of a document, that sort of thing, certify receipt of, now again, I am not trying to get into a legal arena here but I have used the word approved deliberately because to me it has a different context that certify.

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CHAIRPERSON: Thank you. Ms Jamieson, any file from you?

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MS JAMIESON: No, thank you.

CHAIRPERSON: Thank you very much, Mr Witte. Thank you for that. It is quarter past one so we have the lunch break until quarter past two and then we will come back for Mr Venus. Thank you.

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ADJOURNED

[1.15 pm]

RESUMED

[2.16 pm]

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CHAIRPERSON: Thank you everybody. We'll reconvene. Mr Beatson.

MR BEATSON: Thank you, your Honour. We'll call Mr Venus. Who has prepared a summary statement and a revised set or updated set of conditions. These are a clean set. I think we'll track change from this point on in any other updates.

CHAIRPERSON: Thank you.

MR BEATSON: So I'll get Mr Venus to read his summary statement and introduce the conditions and then at the end of that to work briefly through Mr Witte's set of conditions and indicate the areas where we have agreement with what's been put forward where we don't and where we don't why not.

CHAIRPERSON: Okay, great, thank you.

MR VENUS: Good afternoon. So I'm just starting with my executive summary. I'll just take the first para as read. My qualifications and background are set out in my evidence-in-chief. So in this executive summary I mainly focus on matters around prospective consent conditions as set out in a draft set of conditions which I attach as appendix 1 but there are a few high level matters that I cover off on first.

The first one relates to the matter of certainty. Most submitters, the joint witness statements, TTR's witnesses and the application supporting material agree that there is uncertainty associated with the information provided by TTR in relation to the project. This is not unusual. My experience with consent applications, particularly in relation to new projects is that there is always uncertainty because nothing in science is absolutely certain, particularly in relation to biological processes.

Certainty is addressed or identified in section 6.12 of EEZ Act as follows. And I won't read that out. Moving on. This reference, this section 6.1.2 reference to caution in the light of uncertainty is linked by many submitters to a need for the committee to adopt a precautionary approach in considering the TTR application. And in many cases submitters suggest that the precautionary approach requires a blanket decline of the application.

I consider that such a suggestion fails to reflect the actual meaning and intent behind the precautionary approach and is not appropriate for the TTR application. In raising the issue of the precautionary approach many submitters such as submitters from KASM made reference to the principle 15 of the 1992 Rio declaration as it's commonly referred

which reads and I will read it out. But in order to protect the environment the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation. Along with many other definitions of the precautionary approach principle 15 links the need for precautionary measure to evidence of a threat of serious or irreversible damage and scientific uncertainty as to the extent of possible damage.

Accordingly the committee's consideration of the precautionary approach should be informed by two considerations. Firstly whether there are threats of serious or irreversible damage and secondly whether there is a lack of full scientific certainty as to the extent of this damage.

[2.20 pm]

Firstly in considering the realistic level of predicted effects I refer below to evidence in joint witness statements relating to predictions of effects. I conclude that whilst potential effects are identified mostly relating to consequential effects of the sediment plume the level of these effects is in general not considered serious or irreversible. The exceptions appear to be raised particularly by KASM submissions in relation to effects on Maui's dolphins and Blue whales, and effects on commercial fishing raised by commercial fishing submitters. I address these matters separately as follows.

In respect of Maui's dolphins, concerns about the potential effects of TTR's operation on Maui's dolphins are in a large part based on evidence from Dr Slooten for KASM. Dr Slooten dismisses TTR's aerial work opining that absence of evidence is not evidence of absence. And she asserts that Maui's dolphins habitat runs as far south as Whanganui. Dr Slooten's statement differs from the corresponding paragraph of the Marine Mammals joint statement which notes as follows. And I'll read parts of that.

The experts concluded that the South Taranaki coast is considered to be part of the historic natural range for Maui's dolphins and is on the margins of their current range. It notes in the last sentence, Maui's dolphins have been recorded as far south as Whanganui with their relative density decreasing south of Cape Egmont.

In considering the likelihood that Maui's dolphins may be affected by TTR's activities I consider it important not only to consider the likely theoretical presence of Maui's dolphins but also consider their likely abundance. Dr Slooten helpfully refers to a report entitled, risk

assessment of threats to Maui's dolphins as the basis for her assertions regarding the range of dolphin distribution. She stated that it's not new information that these animals range to Whanganui and the expert panel in 2012 of nine experts specifically on Maui's dolphins reviewed all this information and concluded that they ranged to Whanganui.

So I reviewed this report and I find that figure 1 of that report which is attached to my evidence does indeed confirm that the southern potential range of the Maui's dolphin is southward beyond Cape Egmont. However, figure 1 indicates that the expected density or abundance of Maui's dolphins in this area is less than .0005 dolphins per square nautical mile which converts to one Maui's dolphin per 2000 square nautical miles in the vicinity of the TTR project area.

So it seems to unsurprising that TTR's aerial survey which covered 4550 nautical miles of transect equating to around 7300 square nautical miles failed to sight any Maui's dolphins. Reflecting this very low likelihood of Maui's dolphin presence Marine Mammals joint witness statement also notes that given the very small size of the Maui's dolphin population, 55 individuals, an aerial survey with much higher sighting effort would be required to detect the presence of Maui's dolphins in South Taranaki Bight.

I consider that even the absence of absolute scientific certainty in respect of Maui's dolphin it's reasonable for the committee to rely on the findings of threat management plan and TTR's corroborating aerial survey data as a meaningful basis for concluding that the risk of TTR's operations being encountered by a Maui's dolphin will be extremely low. And in any event my reading of the evidence is that Maui's dolphins would move away from the noise source if they weren't happy.

In respect of Blue whales. Many submitters including KASM raised concerns about potential effects on Blue whales. In this regard I note that Professor Wursig concluded in respect of Blue whales that noise generation by TTR activities would be highly unlikely to cause more than minor behavioural disturbances and that he considered it a small possibility that Blue whales would be feeding on euphausiid crustaceans I 30 to 40 metres of water.

The Marine Mammal joint witness statement confirms that the Blue whales are much more likely to be found in deeper water around 100 metres deep to the northwest of TTR's operational area in association with the upwelling occurring around Kahurangi Point.

5 There has been no evidence presented that there are Blue whales foraging in the proposed project area. The impact assessment included information from a paper by Dr Leigh Torres entitled evidence for an unrecognised Blue whale foraging ground in New Zealand and I cite that reference there and I just note that it was included in the application material and in the impact assessment.

[2.25 pm]

10 This paper reported sightings of blue whales approximately 50 kilometres to the southwest of the project area, again in waters over 100 metres deep.

15 In summary effects on zooplankton which provide food for Blue whales are considered to be highly unlikely and I'll cover this point later. A multi spectrum noise limit has been proposed in conditions along with a range of other measures to avoid effects on blue whales, along with other large cetaceans. And in any event it's highly unlikely that blue whales would be found inshore in the vicinity of TTR's project area.

20 So accordingly again based on my appraisal I consider that even the absence of absolute scientific certainty in respect of blue whales it's reasonable to conclude that for Maui's dolphins the risk to blue whales associated with TTR's operations is extremely low.

25 Turning now to commercial fishing. A wide range of concerns have been raised in relation to commercial fishing as set out for example in the evidence of Douglas Gordon. In my view these concerns were all addressed in the joint witness statement of the fish and zooplankton experts. And I highlight key matters in the joint witness statement and evidence relating to commercial fishing concerns as follows.

30 Paragraphs 17 and 24 of the joint witness statement state that fish and zooplankton in localities away from the immediate source of the plume are unlikely and highly unlikely respectively to experience adverse effects as a consequence of the plume or as a consequence of direct effects on decreases in water clarity. The witness statement at para 18 says, the likely magnitude of effects of the TTR operation on fish stocks even taking account of the plume concentration at the immediate source are estimated at between 1 percent and 11 percent of the magnitude of the effects of fishing on fish stocks.

35 Paragraph 18 also says that food related effects on zooplankton feeding species such as pelagic fish are highly unlikely to arise. The ANZECC guidelines are appropriate as a basis for managing discharges or

contaminants from TTR operations and in regard to ANZECC guidelines I note here that proposed conditions stipulate ANZECC guideline compliance at a specified mixing zone boundary and as associated monitoring framework.

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Notably use of the 99th percentile guidelines values is recommended. These values equate closely to background levels providing certainty in respect of concerns raised about contamination and bioaccumulation of fish flesh. I'll ad lib – this provides in my view a significant level of environmental protection. In the normal run of events the 95th percentile value is used but in this particular case we are volunteering the 99th percentile as a higher level protection from this discharge.

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Dr Francesca Kelly confirmed that anticipated environmental levels of metals would meet stringent levels in respect of potential risk to human consumers and she was not cross-examined on that point.

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Now the next point arising in relation to fish and zooplankton is that Dr McDermott in her executive summary concluded that there's no need for the monitoring of metal concentrations in tissues of fish attracted to the mining plant or structure. Again she was not cross-examined on that point.

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The witness statement para 25 says additional sediment from the mining operations will have no additional level of effect on rock lobsters over that of natural processors. It also says the effects of mining on rock lobster larvae stages would be minor as inshore reefs are located within naturally turbid waters indicating a tolerance of species to such conditions.

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Capture of fish by the extraction head is not considered to be a notable risk. Attention is given to lighting controls and conditions and these lighting controls will help to minimise light spill. And that's in relation to attracting fish and other living organisms to the boat. So there's a light mitigation condition proposed.

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Para 34 says, monitoring of fish species that are abundant around the mining site is not warranted. With regard to reef fish it would be appropriate to monitor these species at North and South Traps, at the Graham Bank if reefs actually do occur at the site and in the biogenic shell and bryozoan areas to the south of the mining areas. With regard to demersal species the method used to monitor such species, bottom trawling, is likely to cause a larger effect on the demersal fish and benthos than the effects that are being assessed. And that was quite a significant finding of the joint witness statement in relation to monitoring.

[2.30 pm]

5 And finally, at paragraph 37 the joint witness statement said that conditions that require the monitoring of Zooplankton are not necessary.

10 So accordingly, based on my appraisal of the material, before the panel, I consider that once again even the absence of absolute scientific certainty in respect of all elements associated with commercial fishing it is reasonable to conclude that the risks associated with TTR's operations are extremely low.

15 KASM legal submission raised a list of other perceived areas of uncertainty additional to the Maui dolphins, blue whales and fish and these residual areas related to the plumebenthic effects of phytoplankton. I consider these matters in the following sections of this executive summary, in each case I conclude that even in the absence of absolute scientific uncertainty in respect of all elements associated with these matters it is reasonable to conclude that risks associated with TTR's operations are extremely low.

20 So, in conclusion, therefore in the matter of certainty and whilst I acknowledge that there is a lack of absolute scientific uncertainty in a number of areas, my experiences that this is normal when consenting new projects and, in my view, a level of associated risks is sufficiently low and I agree with Dr Huber's conclusion that there is sufficient information available to the committee to make an information based decision particularly when consideration is given to an adaptive management framework such as that underpinning the attached set of conditions.

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35 The other element triggering the need for a precautionary approach is whether damage is irreversible. In this regard, the TTR project can be distinguished from terrestrial mining projects which often have irreversible effects. With the difference attributable to the inherent resilience of the South Taranki bight physical and biological environment arising from its dynamic nature. This resilience and dynamic nature coupled with the fact that discharge contaminants other than sediment will obtain background levels in very close proximity to the operation, means that following cessation of activities there will be no residual effects in the operation other than some limited bathymetric changes once re-colonisation of the operational area has occurred. In this regard the effects of TTR's operations can, in my view, be considered as reversible.

40

45

5 Now in the following sections I consider conditions which should be applied if a decision is made to grant the consent. The attached set of conditions, which is appended to the statement, is based on the agreed version which was the outcome of the mitigation expert conferencing session. There has been subsequent caucusing as Mr Witte pointed out among parties but timely constraints have not allowed preparation of a unified set of conditions for the committee and the layout that I present here is my attempt at re-ordering the conditions to try and make a logical process rather than it looking like they were developed by a committee and I did try and do a red line version but it turned out to be more red line than black line so, in my view, it was not worth it. But we will try, I think, following on from discussion earlier, I will try and get together with Mr Witte and we will see if we come up with a clear version merging our two conditions of two consents.

15 The attached conditions have been prepared in the light of evidence and joint witness statements evaluated after completion of the agreed conditions. The committee has heard expert evidence from many parties over the past five weeks and has had the benefit of a wide range of joint witness statements developed from sixteen expert conferences. I attended eight expert conferencing sessions to assist with my understanding of issues and as a basis for developing conditions of consent. I don't propose to summarise the findings of the evidence or each joint witness statement but I note below excerpts relating to the development of consent conditions.

20 The overall approach in respect of developing consent conditions has been to provide for adaptive management based around information collected from a base line monitoring programme. The approach is to find in recommended condition 8, that is out of my draft, which is as follows, and it is a sequence, so firstly, the consent will manage its effects using the risk based tiered approach and it will follow a series of steps. Firstly, specifying qualitative environmental performance objectives associated with the activities. Secondly, undertaking base line monitoring to establish a statistically robust description of the natural variability of key potential receptors. Thirdly, using that information to develop quantitative measures for relevant physical and biological indicators to inform as, as triggers, sorry.

35
40 **[2.35 pm]**

Thirdly, using that information to develop quantitative measures for relevant physical and biological indicators as triggers to inform compliance with the performance objectives and relative to the baseline environment. Once those triggers are set, operational monitoring will be undertaken to establish whether or not they are being met and

operations will be adaptively managed to ensure that the identified objectives are achieved.

5 And finally, there needs to be a review phrase where the trigger indicators are assessed and reviewed in order to determine whether they need to be restricted or relaxed, where it is demonstrated that the triggers are inadequate or excessive in relation to achieving the objectives.

10 In other words, that is an iterative process, continually reviewing but using the environmental objectives, if you like, as the key point that is the touchstone of all of the monitoring work that goes on.

15 The attached recommendations are set over a range of qualitative environmental performance objectives. That is set out in condition 9; I will come to them later. But the objectives are generally framed in terms of whether effects should be or shall be no more than minor, or minor, or moderate, or significant. And each one has associative spatial limits attached.

20 The use of qualitative objectives in this way is, in my experience, consistent with the RMA consenting approach followed for other marine development projects with which I have been involved, and particularly the Crest Marine Turbine project in the Kaipara Harbour.
25 And following on from Mr Witte's comments earlier, I was involved with the Crest project for five years and I have got something of a shock when I heard him say that there was no reference in the MMP to "no more than minor" and "minor". And he is quite right, it is actually not referred to in the MMP because there is reference to the terms "no
30 more than minor" and "more than minor" in the conditions and that is essentially where we are now.

35 We are talking about setting conditions, we are setting environmental objectives in the conditions of the consent. The EMMP is the detailed way in which the consent holder will give effect to achieving those objectives.

40 So, if you look at the wording of various conditions in the Crest decision and I think the legal people will do part of their submission, they will give you the detail, but there are a number of conditions in the final conditions of Crest that refer to triggers being effects will be no more than minor. They refer to effects on cetaceans, fish, elasmobranchs and commercial fishing.

And so that is the widely – and not only in that consent, but in other consents, it is a widely accepted methodology of using a qualitative objective.

5 So, turning to the next para, it was para 30; so next, “The recommended conditions provide for the development of environmental performance triggers”. So, following on from the setting of these objectives we now look at how triggers will be developed. Basically, the approach is that the consent either will use the data from baseline monitoring, so there will be a baseline monitoring plant, to establish these trigger indicators and values, which if exceeded, will require an adaptive management response to ensure that the performance objectives are achieved, and there is a mechanism specified for how the triggers will be set.

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15 And I think it is important just to consider a couple of things, which I don’t have in my evidence here, but I will just talk about it. I think Dr Huber, actually covered it pretty well in answering questions in relation to not picking a number, picking an arbitrary number and rushing through to make a judgment on a number. He advocated the same process I think that I am talking about here, which is objectives and having a baseline programme covering a number of seasons, so you can get an idea of the actual annual variability.

20
25 And not only on the terms of that baseline study, but drawing on information that has already been collected, so there has already been a number of years of information collected by TTR and leading up to this. So, you use that whole body of information to inform quantitative conditions.

30 And I think talking to Dr Huber, he gave an example which relates to coastal erosion and I think he highlighted it when he gave his evidence, but he was talking about patterns of erosion in relation to their surveys. He noted that depending on when the period was set, you could have missed out a period where there was about a two metre change in shore level relating to one erosion event. It is important to have a sufficient time period to get that idea of natural variability.

[2.40 pm]

40 And so that is why we are promoting a two year baseline programme and again, that is why it is important not to just arbitrarily set numbers.

45 The next condition is 11 which talks about trigger indicators and values established pursuant to the previous condition. It should be developed in terms of two tiers comprising an alert level which triggers increased

management attention and a maximum compliance level which indicates potential enforcement. These are the orange and red lights.

5 Just to explain a bit on those; we can work out a – based on baseline results – a reasonable attempt at an orange light and that basically says, look, the numbers are getting to a level where you need to give attention to your operation and there are a number of operational matters that TTR can put in place, including moving the mining, they can look at their grade-control fines content.

10 As an extreme, the last round of modelling actually showed quite a sensitivity to the fines from grinding, the re-run of the modelling showed that there was an increase in the ROM fines and a decrease in the fines from grinding, and there was a disproportional improvement in the discharge.

15 So, in other words, you can use some of the operational attributes of the project to actually improve those environmental outcomes, but I think it is important to leave those up to the company to decide subject to meeting the environmental performance objectives.

20 The problem with the red light is that the numbers are too high. In terms of fisheries, for example, yesterday we heard, Mr Gordon was referring to a paper on angularity of sediment and I think Mr Rennie mentioned that the trigger value there was 41 grams a litre; that is 25 41,000 milligrams a litre. So, some of those effects levels are extremely high and I think I mention it later on in my evidence, but to set one of those very high effects levels is probably not good – I don't know what the term is – it is not good resource management practice in my view. I think it would be much better setting an alert level which is then 30 responded to by the operator in relation to those environmental performance objectives.

35 Turning to para 31; development of trigger values based on monitoring in this manner is commonly used at large scale marine projects, for example, there is an underpinning basis for the adaptive management approach adopted (**ph 2.54**) and consents for Crest was an integral part of consenting for the Australian Wheatstone project and I have cited a reference to that here.

40 And in one of the approaches they were advocated by the USEPA in relation to developing suspended sediment water quality criteria, so it is a well-accepted approach.

45

In my opinion this framework, along with the establishment of particular conditions or of identified matters of particular relevance provides an appropriate resource management approach to consenting the TTR project.

5

Now, the following table addresses a range of matter which I consider relevant to development of conditions within the overall framework that I have talked about earlier in my brief and I will just go through these one by one. The matters are alphabetically so there is no ranking of them.

10

So, the first one is in relation to air quality; and based on the Air Quality Joint Witness Statement there, under “Performance Objective” that in relation to air quality that ground level concentrations on land of contaminants shall comply with the – the ground level concentrations will be compliant with New Zealand Ambient Air Quality Guidelines and relevant parts of the National Environmental Standards. So, that is the broad objective and then we have got condition 104 which sets out the heavy fuel oil combusted shall have a sulphur content of not more than 3.5 per cent by weight. So, that is addressed in terms of specific output control and on the emission of the fuel from the plant.

15

20

In terms of baseline monitoring period; two year period is recommended in condition 79. Joint witness statement suggested one to two years, Dr Huber suggested a two year period, the longer period has been recommended here mainly to provide an opportunity to obtain more data on seasonable variability than the shorter time frame would permit. And it goes back to what I said earlier about Dr Hume’s comments.

25

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[2.45 pm]

In terms of bathymetry; an objective of minor variation of bathymetry in the operational area following redeposition. So that allows for the estimated one metre variation for deposition at a pre-mined area and it allows for the residual pits and mounds at the periphery of the operations.

35

And also that no more than minor adverse effect on commercial fishing provided the creation of the pits and mounds and that relates back to the potential effects on trawling. And I refer there to Nicky Gibbs’ evidence yesterday. And we’ve recommended including bathymetry in the list of topics for monitoring programmes.

40

45

In terms of benthic ecology. A range of performance objectives are identified in relation to benthic ecology including a number which specify no more than minor effects in the areas of particular relevance which is the most stringent category in my suggested scheme. And just as a footnote to that you could specify no effect but scientifically it's not possible to show that. There would always be some effects. So there's always a need to provide for an effect for a minor effect. Just in terms of the science. You're determining a change even if it's just a statistically different change it's always expressed as a probability. So I'm recommending the most stringent level here is stringent categories no more than minor.

And the objectives are that significant effects on benthos are limited to the vicinity of the operational extraction area itself. It's an objective if you like for recovery of the benthic biota communities in the operational area within 10 years of cessation of mining activities. That pretty much out of control of the applicant, but that's an objective and it's something that will be subject to monitoring and given the lifetime of the project if there are things that can be done to enhance that or if that looks like to be a problem well that will highlight it in terms of the environmental management.

I'm limiting in terms of near field benthos being affected to a moderate level by deposition of tailing finds and then no more than minor impact on a series of identified high value areas, biogenic habitat to the southwest, Rocky Reef biodiversity, due to deposition no more than minor effect on Rocky Reef biodiversity due to light reduction and the Rocky Reefs are in relation to the Traps, Three Mile reef, and Patea reef and Graham Bank which is referred to subsequently in the conditions.

And then finally no more than minor adverse effect on native biodiversity through the incidental translocation or non-indigenous marine species and/or spills. And that relates to biosecurity and that's covered by way of a biosecurity management plan which is the next section.

Back to benthic ecology though a set of monitoring criteria for benthic studies is defined in condition 79A and that's based on recommendations of the benthic ecology joint witness statement. And in that there's reference to specific areas and as you'll see condition 79A (iv) talks about monitoring sites on reefs of special interest such as north and south Traps, Graham Bank, Four mile reef, Patea reefs and Waiinu reef. So there's identified special sites that are the focus of monitoring.

In terms of biosecurity various fishing submitters and submissions have raised the issue of potential risks in relation to biosecurity. Condition 74 makes provision for development of a biosecurity management plan which is in my view is the correct way to address these issues of concern.

Birds. Basically there's been a series of recommendations to the seabird joint witness statement and they've been incorporated into the recommended conditions and under the umbrella of the seabird effects mitigation and management plan as a framework.

Coastal processes are addressed in a similar way. All of these coastal processes objectives are for no more than minor effects. Other than in the immediate vicinity of the operations so we're looking at no more than minor change in wave height, no more than minor influence on beach state, geomorphic coastal erosion, no more than minor effect on sand supply. No more than minor effect on erosion and accretion.

[2.50 pm]

In terms of the methodology there'll be this recommended continuing coastal stability and coastal survey work to monitor that and again the results of that work would be referred back by the peer review group and by TTR back to these objectives. And so that's the intention and so all of that work references back to the objectives.

In terms of where to set limits. Now Dr Longdill advocated that conditions should be set on discharge parameters such as mass flux and particular size dispersion and limiting the run of mined sediment and/or processing technology. Because in his view this represents a more effective mechanism than controlling the suspended sediment concentration in the plume by proxy.

Now I understand the Director General of Conservation is promoting a series of stringent limits on mass flux particle size distribution of discharge and these will be tabled as evidence and indeed they were, this morning. Now I know here that I disagree with this approach, but what transpired was there is an alternative condition that was put forward by Mr Witte and I've talked to the TTR engineers and people about that condition. And it appears that subject to one change the limit on the mass flow and the PSD mass discharges it looks like it's acceptable and I'll turn to that when I go through the conditions.

So I think given that I may actually leave out the rest of that paragraph and I'll just come to the notwithstanding. So notwithstanding the above I recognise there is merit in setting a condition which broadly

defines the characteristics of the material discharged but I don't consider this should be set as a stringent compliance measure and again that's something I'll come to when I go through the conditions.

5 In terms of grade control drilling. Conditions 105 and 106 are presented
as a workable solution to address the risk of excessive fines being
processed through the system and discharge. And this involves using
the results of grade controlled drilling to identify prospective risky high
10 fines sediments. Presence of a lens containing a high concentration of
fines does not necessarily translate directly to elevated receiving water
fines. And the approach set out in conditions 105 and 6 provides TTR
with an opportunity to evaluate each lens detection on its merits. And
adopt a risk management methodology which again will be consistent
with the identified environmental performance objectives.

15 And just on that, just if you make a note I think Matt Brown in his
evidence discussed it in the sense that the crawler will be mining
through a face and there may be a lens within that face of mud or fines
but the question isn't so much whether there's a layer of fines on its
20 own but it's how it fits in with the PSD of the whole area that's being
extracted. And that's the kind of consideration that the conditions I'm
proposing here would take into account.

25 In terms of plume conditions I think everyone agrees that the plume
drives almost all of the environmental effects of the project and it's
important therefore to focus on the plume in terms of environmental
effects. Now I believe the focus for consent compliance limits should
really be on the receiving environment using the approach that I
30 mentioned earlier which is in relation to setting a receiving water limit
and monitoring against it. And my views in this regard reflect those of
Dr Huber.

35 So the recommended conditions contain various environmental
performance objectives relating to the plume, limiting elevations to
within 10 kilometres of the source, subject to avoiding suspended
sediment elevations on the biogenic areas to the southwest and I think
that's something that will have to be attention to in terms of the
operation, allowing moderate elevations in plume suspended sediments
40 from 10k of the source to about a line 5ks from the coast and then no
more than minor plume suspended sediment concentrations in
comparison with natural concentrations within 5ks of the coast.

[2.55 pm]

5 And finally B (v) deposition rates of mining-derived sediments to be indistinguishable from their natural background beyond 10 kilometres from the point of discharge.

10 These environmental performance objectives should be considered in the light of objectives also set for recognised ecologically important areas, such as the traps and the biogenic habitats to the south-west to the operational area. And that links back to the benthic protection objectives as well.

15 So, in my view, developing meaningful environmental trigger values on the basis of baseline modelling is the most appropriate approach for addressing direct plume-related effects.

20 Turning to ecological compensation, Dr Marie Brown in her evidence promotes the use of ecological compensation as a means of addressing residual effects which haven't been avoided, remedied or mitigated. As recorded in the Joint Witness Statement for Mitigation of Effects at paragraph 17, I consider there are no residual effects warranting such compensation.

25 I can appreciate that there will be situations of serious or irreversible effects where such an approach is warranted, but in my view that is not the case with the TTR project. Dr Brown, para 15 of her summary, cites a number of residual effects which she believes warrant ecological compensation.

30 The first one is time lags from mining activity into purported ecosystem recovery, potential effects considered unlikely, including vessel strikes, impacts on seabirds and disturbance to fauna through noise and other impacts. This also includes other areas where further baseline work is recommended and finally the uncertainties both
35 inherent in the activity and with respect to the parameters of models being relied on to simulate impacts.

40 In terms of Item A relates to unmitigated effects relating to a time lag for recovery. I believe the key not recognised here is that recovery over much of the project area will occur within the lifetime of the project and that in time there is anticipated to be no residual effect.

45 Because even if we allow the recolonisation to full recovery of the order of a decade, the lifetime of the mine will extend well beyond that. And that maybe mining the consent period is sought for 20 years, the mining operation might continue for 16 years, so by the time the

operation is in its last area, the first area mine will, according to these, likely to have been recolonised and recovered.

5 So, there is a process of recovery in the time frame – if there is some uncertainty over the time frame, there doesn't seem to be any uncertainty that recovery will in fact take place.

10 The benthic area directly affected is relatively small in the context of the South Taranaki Bight and in my view, ecological compensation as promoted by Dr Brown for such reversible and limited effects is not warranted.

15 Second item relates to effects around which active avoidant measures have been proposed. Navigational safety measures are included in recommended conditions of 113 to actively avoid collisions with marine mammals. In respect of effects on birdlife not only does experience with FPSOs elsewhere in the South Taranaki Bight show that the risk of adverse effects on birds is very low and there is a reference there to section 283 in the impact assessment where I had drawn on some information provided for patrolling industry, FPSOs and the numbers there are remarkably low in terms of effects on bird strike.

25 But also, in addition to the low risk, a wide range of mitigation measures have been recommended in condition 70 to further mitigate effects. In regard to marine mammal, a stringent noise limit in a wide range of marine mammal noise effects mitigation measures have been included in the recommended conditions 92 to 102.

30 From my perspective Item C is not an effect, it is difficult to envisage how compensation could be developed around uncertainty in respect to modelling parameters, so my position here in regard to ecological compensation is consistent with that of Dr Huber that “Adverse environmental effects associated with the project are appropriately addressed by way of mitigation at source, if necessary”.

35 In conditions 135 to 139 I have added a reference to the coupe platform with the intention of addressing issues raised by Origin Energy.

40 **[3.00 pm]**

45 Turning to marine mammals; a number of recommended conditions address the risk of interactions with marine mammals, condition 79 sets out monitoring criteria for marine studies based on recommendations of the Marine Mammal Joint Witness Statement, recommended Conditions 92 to 102 contain a range of measures at avoiding and

mitigating effects on marine mammals. And Condition 103 sets out the noise limits that were agreed to by the Joint Witness Statement. And they are directly drawn up around avoiding effects on marine mammals.

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And, finally, Condition 113, as I had noted earlier requires that, as part of developing a safety case, attention should be given to controls relating to the avoidance of potential collisions with marine mammals. And I think on that point, I'd just emphasise, I think it came up with the navigational witnesses, there is a ship safety issue. You don't want to crash your ship into a whale, not only from the whale's point of view, but from your ship point of view. So it's quite appropriate, I think, to have it as a safety requirement to avoid running into large marine cetaceans, or cetaceans.

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15

I consider that these conditions suitably address issues relating to marine mammals and, whilst noting comments earlier in my evidence, regarding the low likelihood of effects on food supply, and, I guess, on the low likelihood of occurrence of marine mammals, as well.

20

There was one point, which I have not included, from a set of draft conditions recently circulated by Mr Baxter and it equates to a requirement to shut down operations. And, I'll just note that the last draft that we received from Mr Witte has slightly modified those conditions, so I'm now comfortable with those shut down conditions, as set out in his Draft of Evidence.

25

So, I think I'll delete the rest of that paragraph.

30

In terms of navigational safety. In recommended Conditions 112 to 120, I have incorporated all of the Maritime Safety recommendations from the Navigational Maritime Safety Joint Witness Statement and in relation to a question that has come up frequently from Mr Christensen, I have provided in there for, in the preparation of the safety case, that the EPA are involved and to certify the safety case in respect of environmental effects. I've tried to fold that in. I think the key there is whilst there might be some uncertainty in terms of the bureaucracy around it, I think the Health and Safety Act, as discussed yesterday, provides that overall umbrella of responsibility with the involvement of the EPA in the way I've stated.

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I've proposed and accepted the suggestion of an operational plume model, Conditions 107-10, to assist developing affective adaptive management methodologies to help predict background and mining drive suspended sediment concentrations and deposition under various scenarios to inform the management of the operation and to assist in

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distinguishing operationally derived contributions to suspended sediments and deposition from the background process. So you would be able to distinguish operational from natural. It is a very important part of the whole process of determining whether you are having an effect.

So, it is intended that this operational plume model will become an integral tool in the adaptive management process.

10 In relation to phytoplankton, Dr Pinkerton identified potential effects in relation to primary productivity in the South Taranaki Bight, likely to arise from reduced light penetration through plume derived suspended sediment concentrations. I consider, having read Dr Pinkerton's and Dr Grieve's evidence that Dr Pinkerton's predictions are likely to be
15 overly conservative. And I think that was reflected in the outcome of the Joint Witness Statement, as well, where they talked about models on models on models increasing uncertainty, increasing conservatism, if you like.

20 And I think an important factor in relation to predicting potential effects on primary productivity is that phytoplankton in the South Taranaki Bight net downstream of the TTR operational area is likely to be nutrient limited, rather than light limited. And, I think, if we remember back to Dr Grieve's cross examination, she noted that the
25 main driver of primary productivity in the broader South Taranaki Bight is the Kahurangi upwelling. And she mentioned that phytoplankton move from nutrient rich upwelling area in blobs through the south eastern South Taranaki Bight. And she noted that the TTR area is on the edge of this upwelling plume, where nutrients are starting
30 to tail off.

So there's an engine which is a Kahurangi upwelling, which is putting nutrients up into the water column, the phytoplankton are being eaten by zooplankton, which is then being eaten by whales, and that all
35 occurs out of the Kahurangi, off Farewell Split, and then there is a residual movement of the surviving phytoplankton that are moved down into the South Taranaki Bight by currents. And that is the process that she described.

40 And her conclusion was that, so there are lower levels of biomass and probably production in the South Taranaki Bight in the vicinity of the project area.

[3.05 pm]

5 In recommended Condition 9F(VII), I set out an environmental performance objective of no more than minor impact on the South Taranaki Bight phytoplankton abundance and distribution attributable to optical property changes arising from TTR. And in monitoring, there is recommendation of monitoring of benthic chlorophyll A, and that's Condition 79, and also monitoring photosynthetically available radiation, Conditions 83 and 131. So these monitoring measures, will I believe assist to interpret effects on incident light and resultant primary productivity.

15 The role of the EPA and Maritime New Zealand Safety Case. Well, I've just mentioned that. But, just to note that the recommendations of Mr Birmingham and the witness yesterday, whose name, Copland, I think. Anyway there was a witness yesterday that covered off on the same issue and I've carried those recommendations over in two conditions.

20 And, I've suggested that Safety Case be provided to the EPA prior to commencement of activities for certification that aspects of the Safety Case that relate to environmental effects are consistent with the performance objectives.

25 And then in the last point on the overview of the conditions is the Peer Review Group. Recommendations 43 to 51 set out procedures for establishing and operating a technical Peer Review Group. That will have an important role in the development of these monitoring programmes and trigger values under the framework I'm recommending.

35 And I set out there a series of objectives of the Peer Review Group. I won't go through them one by one, but essentially they are to, a broad concept is that the Peer Review Group starts as soon as practicable to set up the framework for baseline monitoring. It uses a baseline information to help inform these quantitative triggers coming from the objectives and then to follow through with the ongoing monitoring programme to establish achievement with the objectives.

40 A Peer Review Panel, if I turn to the last para in that box. It's a commonly used approach. I have been involved in a number of projects that have used a Peer Review Panel and it works very successfully in my experience. I am also suggesting that, as Condition 47, that the membership of the panel be confirmed by the EPA. And also in the suggested conditions I am including a further Marine Science Specialist, appointed in consultation with the EPA. So, we had a

5 mammals person, in Condition 45, so we have got an iwi representative appointed the committee, a senior management rep or equivalent from the consent holder, a marine ecology specialist, appointed in consultation with the Department of Conservation, a specialist in the field of marine plume modelling, appointed in consultation with the Taranaki Regional Council. For the main reason that the effects of the discharge are expressed, if you like, in the CMA and, therefore, I think, it is appropriate that the Regional Council could have some involvement there. And also a marine science specialist, appointed in consultation with the EPA.

15 And I think that brings, we don't want to have bureaucrats, or we don't have agency people on this panel. It is meant to be an expert panel, but I think it is appropriate to have people appointed in consultation with the agencies.

20 The only other point that came up from Mr Witte's was this question of certification versus approval. And, just for the record, I note that I've used certification twenty times and I used approval six times. And, yes, I agree that we need to have some consistency in there and that is something we can go away and have a look at. But I didn't only refer to certification.

25 And, in my opinion, the committee has before it adequate information to make an evidence based decision and I'm just repeating there the statement of Dr Huber, I think that there has been a lot of information provided and it is really important, I think, to recognise that I think there is enough there to actually make a decision and put an adaptive management approach to the granting of conditions.

30 **[3.10 pm]**

35 What I would like to do now is just go through some of the proposed conditions, just as an overview.

40 So, if we have a look at Condition 3D and F. There are a number of conditions there that relate to fines levels and tonnes per hour discharges from the hydro-cyclone overflow and underflow and all the rest of it. I am proposing that Conditions D and F get deleted, along with all of Condition 5, and be replaced by Mr Witte's alternative wording. With one change: instead of it being a combined mass flux of solids not exceeding 7,192 that number should be changed to 7,360. So we are looking for an increase in the total hourly mass flux. But, keeping the limits on the fines as they were. So that provides the environmental protection, but gives the applicant the opportunity to mine lower grade material, subject to meeting the fines limits.

45

CHAIRPERSON: Could you please repeat that number?

5 MR VENUS: Yep, 7,360. I understand that it reflects an 8 percent rate. So, all
the numbers to date have been based around 10 percent, but it varies.
That is an average of 10 percent. Sometimes they might be mining 8
percent grade. And what that means is that there will be more sediment
discharge and there will be less iron taken away.

10 So, in terms of the Conditions, there is a slight correction that I need to
make here, too. Where I refer in Condition 9B(III). Oh no, that is right,
that's fine, ignore that. I was having a moment.

15 So those environmental performance objectives in Condition 9 I would
just invite you to go through them. As I said, my hierarchy starts at no
more than minor effect and I think the highest one I have got here is
that there are some significant elevations which are provided for. And
those are related to in the vicinity of the operation itself. There will be
some elevations in turbidity, there will be some loss of benthic life, in
20 the immediate mining area, which I think should be provided for.

But the rest of those criteria are similar to the criteria that were set out
in the table attached to the agreed set. There are a few minor changes,
where I've tried to actually bring the wording back to no more than
25 minor. I had different wording in those, so I've just tried to make the
language more consistent.

30 In Condition 52, I am in agreement there with Mr Witte on inclusion of
a Marine Mammals Management Plan as a good placeholder, if you
like, for our Marine Mammals Initiative.

35 Just a note in regard to the commercial fishing conditions starting at 65.
The previous agreed version had some conditions relating to ... If we
turn back to the previous conditions, there were two additional matters
for the Fisheries Management Plan to include and one of which was ...
They related to coming up with options for looking at compensation
and quota managements. I have deleted those two requirements based
on the pretty strong conclusions of the Fish and Zooplankton Joint
Witness Statement. There were two there and one was developing a
40 protocol to determine methodologies to assess effects of fish stocks and
secondly identify measures and protocols for compensation. I have
dropped those out because I think in terms of the monitoring
programme as promoted in here where we are going to be covering the
issues that drive effects on commercial fisheries. That is my preferred
45 focus in that respect. I just thought I would highlight that I had deleted
those two parts of the fishing management plan.

[3.15 pm]

5 There are a few minor additions in condition 86 in addition to those total masses now that there is an agreement on fines, mass discharges, I am proposing that there be an added section in condition 86 looking at the consent holders to measure size classes to demonstrate compliance with that condition. That arose from Mr Witte's evidence.

10 In condition 98 I would just like to insert the words within the project area as detailed in schedule 2 attached and I will just explain that.

CHAIRPERSON: Just say that again, 98?

15 MR VENUS: Yes, 98 second line so marine mammals within the project area as detailed in schedule 2 attached to these conditions. If we look at schedule 2 I have defined the monitoring area boundaries and the issue there I guess is that we need to actually set a boundary outside the operation area obviously but a limit in terms of monitoring and this I have to confess it is completely arbitrary and it is based on my interpretation of the plume modelling work that Mr Hadfield had done, but the point I am trying to get at, especially in terms of marine mammals is that I do not see that TTR going off and looking at the distribution and abundance of blue whales some 60 kilometres away is warranted on the basis of the evidence that I have seen already. I think there is a need to delineate the monitoring area.

20 Just for completeness I guess, 110D and again arising from discussions with Mr Witte this morning, if you can just in after 110D add the words and sediment deposition (separated by size fraction). Okay, and that basically is the highlights if you like or the overview of the main points out of the conditions.

25 As I say where I propose to have more discussion with Mr Wittte I have in terms of going through the wording of his conditions, I have actually highlighted as I have gone through the relevant parts of Mr Witte's conditions that I am bringing across, I am adopting in terms of this.

30 MR BEATSON: All right then. There is one matter I think I should raise just so that everyone is aware that there is still a potential difference between what the Department is putting forward in terms of its PSD condition if you like and what I think has been discussed with TTR and that relates to whether or not what has been put forward by the Department and that is Mr Witte's alternative wording is an instantaneous and continual maximum and whether or not TTR could

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live with that and I understand TTR's position is they would prefer an average over time, could you just discuss that please.

[3.20 pm]

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MR VENUS: Certainly, if we look at the existing set of conditions and it is expressed as condition 5C these are my proposed appendix A, so if we look at 5C, it is important, okay well the proposal is that the discharge will meet an average tonnes per hour discharge so that has got to be measured over a time period and a methodology has to be accepted. And what I'm proposing in condition 5C, which obviously will move because we're proposing to change the conditions, is that the average values will be expressed on a three-month running average basis, and that will be derived analysis of a daily composite made up of eight subsamples. So we're taking eight subsamples, these are taken at three intervals through the day, and the analysis will be run on that composite sample, and that will give you an average daily, which you can then use to calculate your average from that.

20

I'm proposing here that they be expressed on a three month running average basis, and the idea there is that relates to the size of the mining areas, the blocks that TTR are mining, and that we'll be able to look at it in terms of seasonality. So in other words, that is trying to reflect what's happening in terms of the average discharge from the operation on an hourly basis expressed as a running average over that period.

25

The rationale behind that actually is that the modelling is based on an average. When Dr Hadfield did his model he assumed there was an average through that whole period of a particle sized distribution and a flux. And what we propose, is try and drill down into that and provide an idea of the variability within that, and so we'll have daily results, but the average will be expressed, on proposal will be expressed as a three month running average.

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35 MR BEATSON: All right, thank you. If you just answer any questions.

CHAIRPERSON: Thank you very much. Yes, Ms Jamieson, do you want to start off?

40 MS JAMIESON: Mr Currie is going to start.

CHAIRPERSON: Mr Currie then. Thank you.

MR CURRIE: Thank you, Mr Chairman. Good afternoon Mr Venus.

45

MR VENUS: Good afternoon.

MR CURRIE: I'm representing KASM – Kiwis Against Seabed Mining. I have a number of questions from your evidence. Starting with your main evidence, and looking at paragraph 20, you said that “many other
5 submissions were primarily philosophically opposed to sand extraction and mining generally.” I've just regarded all those submissions has not addressed the application.

MR VENUS: Could I just excuse myself? You haven't got a copy of my
10 main evidence at all, please. I apologise for that.

MR CURRIE: Paragraph 20.

MR VENUS: Twenty. Yes, sorry, what was the question?
15

MR CURRIE: Well the question is this, this application is about sand
extraction and mining, is it not?

MR VENUS: Yes, it is.
20

MR CURRIE: How many submissions did you disregard?

MR VENUS: In terms of numbers I - - -

MR CURRIE: Would you say about over 4,000?
25

MR VENUS: No, no, I didn't disregard over 4,000, there were a number that I
disregarded because they were personally abusive to TTR, some of
them involved the Prime Minister, many of them involved offshore oil
30 drilling, and a number of them that had no bearing whatsoever on the
TTR project – those are the ones I disregarded.

MR CURRIE: Well you said you disregarded – as I understood paragraph 20,
submissions philosophically opposed to sand extraction and mining
35 generally.

MR VENUS: Yes, there were some that were, and those were the ones that I
just mentioned.

MR CURRIE: That you disregarded.
40

MR VENUS: Yes, I disregarded ones that related in my view to personal
attacks on people where I couldn't see a link with the TTR project.

MR CURRIE: I'm sorry, I don't understand then. Did you or did you not disregard submissions which are philosophically opposed to sand extraction and mining generally?

5 MR VENUS: Yes I did.

MR CURRIE: Thank you. Are you familiar with the EEZ legislation?

MR VENUS: Yes, I am.

10

MR CURRIE: And section 46 provision "any person may make a submission to the EPA..." doesn't it?

MR VENUS: That's correct.

15

MR CURRIE: And the submission must be in the prescribed form and submitter must provide a copy of the submission to the applicant, is that correct?

20 MR VENUS: As you're reading it, I assume it is, yes.

MR CURRIE: And there's a time limit of 20 working days, isn't there?

MR VENUS: Yes.

25

MR CURRIE: Can you point me to any other provisions in the Act which excludes submissions based on subject matter?

[3.25 pm]

30

MR VENUS: I reviewed the submissions in respect of how they related to issues arising from the TTR project. There were a number of submissions on a wide range of topics which I considered to be philosophically opposed to mining and sand extraction, and the content of those submissions, I disregarded. I did read those submissions, and I took on board what was in them, but I felt that the matters they raised, were not germane to the issues that were being addressed.

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MR CURRIE: You responded to about 104, is that right?

40

MR VENUS: I identified 104 specific individual submissions and there were a number of the KASM submissions that had additional material attached to them, there were a number of those that I identified as warranting or needing to be considered by the TTR specialists, and there was a KASM broad submission as well which covered a bunch of issues that were being addressed.

45

MR CURRIE: Turning to your impact assessment and you may want to turn to it, there is only one small extract on page 10 about marine mammals. The impact assessment states that, “The South Taranaki Bight generally is not a recognised habitat for marine mammals. No interactions with marine mammals are anticipated.”

Is that correct?

MR VENUS: That is what it says.

MR CURRIE: Do you accept that people make submissions according to the impact assessment?

MR VENUS: May I have a look at the section? I think you are quoting from the executive summary, aren't you?

MR CURRIE: Page 10. It was the non-technical summary, wasn't it, page 10, sir.

MR VENUS: Page 10 talks about crawler specifications in the copy I have got.

MR CURRIE: We can come back to that if you can find it, perhaps.

CHAIRPERSON: Mr Currie, I am assuming you are sort of saying that Mr Venus may not have considered them, but it is certainly open to us to consider them. I am just wondering - - -

MR CURRIE: The point, sir, is that submitters make submissions according to the impact assessment and when they see a comment like that, they may have been reassured that there was no issue with marine mammals, that is the point, sir.

CHAIRPERSON: Thank you. And I am assuming because we have had so many submissions, they have decided to make submissions obviously?

MR CURRIE: Yes, there may have been a great deal more, sir, but I will move on.

In paragraph 18 of your executive summary you say, “That there has been no evidence presented that there are blue whales foraging in the proposed project area.”

You say that, don't you?

MR VENUS: Yes, I do say that.

MR CURRIE: And you have been, or you are the leader environmental consultant to TTR, is that correct?

5

MR VENUS: Yes.

MR CURRIE: So you were involved in the preparation of evidence for this case?

10

MR VENUS: Yes.

MR CURRIE: Under your direction, did TTR contract Leigh Torres through NIWA to prepare a report on marine mammals?

15

MR VENUS: Leigh Torres was contracted by TTR to prepare a report on citation habitat modelling in the South Taranaki Bight.

MR CURRIE: And are you aware that Leigh Torres conducted research on blue whales?

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MR VENUS: I am aware that Leigh Torres published a paper which I cite here which is the New Zealand Journal Marine Freshwater Research.

25 MR CURRIE: And that paper was published in May 15, wasn't it?

MR VENUS: I am not sure what date it was published.

MR CURRIE: When were you first aware of that paper?

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MR VENUS: After it had been published, I can't remember the date, I had no idea.

MR CURRIE: Did Leigh Torres send an extract about research about blue whales to you as a proposed addendum to her report?

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MR VENUS: Could you explain what you mean?

MR CURRIE: Did Leigh Torres send - - -

40

MR VENUS: Yes.

MR CURRIE: - - - an addendum, a proposed addendum to her report dealing with that research about blue whales?

45

MR VENUS: Not to my knowledge, no. Because the first time I heard about that paper was after it had been published in the New Zealand Journal of Marine Freshwater Research.

5 MR CURRIE: And after the publication, you were not aware of any proposed evidence sent to TTR as an addendum to their evidence?

MR VENUS: Leigh Torres hasn't presented evidence.

10 MR CURRIE: As a proposed addendum to her evidence, well, to her report, I should say, to her report.

MR VENUS: Which report?

15 **[3.30 pm]**

MR CURRIE: The report that was published by you by TTR about marine mammals?

20 MR VENUS: The report on citation habitat modelling?

MR CURRIE: Correct. I am talking about that report, sir.

25 MR VENUS: The report was about citation habitat modelling.

MR CURRIE: And when she prepared that report, did she send you a proposed addendum about blue whales?

30 MR VENUS: I can't recall.

MR CURRIE: I see. And do you recall replying to her and saying that was not relevant?

35 MR VENUS: I don't recall receiving any such correspondence, but it is unlikely – if I can just elaborate - it is unlikely I would have communicated with her directly on it, because the contracting with TTR was done by TTR.

40 MR CURRIE: Do you consider that blue whales are relevant to the issue of citations in the area in which mining is taking place?

MR VENUS: Yes, the presence of – yes, yes, I do.

45 MR CURRIE: And yet you are satisfied that there was no reference to blue whales in Leigh Torres statement and that didn't concern you?

MR VENUS: Well her statement was about habitat modelling.

MR CURRIE: She referred to a number of marine mammals didn't she, but she didn't refer to blue whales?

5

MR VENUS: No, she referred to southern right whales, killer whales and Maui's dolphin.

MR CURRIE: Yes, thank you. Moving on then, did you know that in her paper, she said a blue whale sighting was reported some eight kilometres near the TTR, the area affected by your proposal?

10

MR VENUS: In which paper?

MR CURRIE: In her published paper, published May 15.

15

MR VENUS: I don't recall that, no.

MR CURRIE: You don't recall that, thank you.

20

MR VENUS: I don't recall any information at all on blue whales within eight kilometres of TTR's operation.

MR CURRIE: You read that study of hers?

25

MR VENUS: Yes, I did.

MR CURRIE: Did you read her statement that a shipping lane runs within 10 kilometres of 14 blue whale sightings examined in the study?

30

MR VENUS: Yes, I recall that.

MR CURRIE: In paragraph 15 of your witness statement you say that, "The marine mammal joint witness statement confirms that the blue whales are much more likely to be found in deeper water to the north-west of TTR's operation area."

35

MR VENUS: Sorry, what paragraph was that?

MR CURRIE: In paragraph 15.

40

MR VENUS: Paragraph 15 refers to Maui's dolphins.

MR CURRIE: Of your executive summary, is that. Can you please look at the joint witness statement, do you have that in front of you on marine mammals?

45

MR VENUS: No.

MR CURRIE: Can you look at paragraph 28 when you have found it.

5

MR VENUS: Yes.

MR CURRIE: and it says, doesn't it, that, "Blue whales reported elsewhere in the world usually feed in waters deeper than 100 metres, they can also feed in shallow waters depending on the abundance of food supply."

10

MR VENUS: Yes, that is what it says.

MR CURRIE: Are you aware of the research by Dr Sears and others on blue whales in the Saguenay River in Canada?

15

MR VENUS: No I am not personally aware of that.

MR CURRIE: It was briefly discussed by the expert group, I understand. You are not aware of that?

20

MR VENUS: No.

MR CURRIE: Just now in your evidence, I believe you added a comment that you believe a whale may sink a ship, is that right, or to that effect?

25

MR VENUS: No, I think my comment was in relation to navigational safety and I think it was there talking about the concern is often expressed in relation to ships running into large whales from the whales safety point of view, but there is also a potential risk from a navigational safety point of view if a ship hits a whale. So it is prudent for people operating ships to avoid whales.

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[3.35 pm]

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MR CURRIE: How long – can you remind us how long the mining ship is?

MR VENUS: The mining ship which travels at 70 metres per hour is 335 metres long x 60 metres deep.

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MR CURRIE: Do you know how long the blue whale is?

MR VENUS: I don't know how long the blue whale is.

MR CURRIE: If it put it to you 30 metres, does it sound about right?

45

MR VENUS: It sounds a bit small, they're probably bigger but that sounds about right, yes.

5 MR CURRIE: Thank you. Now moving on, Mr Venus, in paragraphs 8 to 11 of your summary you describe the precautionary approach and you cite there the principle 15 of the Rio Declaration, so as far as I understand do you accept that it is applicable in this case as a principle?

10 MR VENUS: As a principle, yes, I accept that it is a principle, yes.

MR CURRIE: Yes. And you accept that there is scientific uncertainty with respect to many effects, is that correct?

15 MR VENUS: The level of scientific uncertainty exists with many projects, including this one, yes.

MR CURRIE: And so I understand your argument is that the effects here are neither serious or irreversible, is that right?

20 MR VENUS: Based on the evidence – my review of the evidence – that will be correct.

MR CURRIE: Looking at the evidence of Liz Sloaten for example, have you read that, her evidence?

25 MR VENUS: I have read her evidence.

MR CURRIE: And her comment that the death or injury of a single breeding female from the population would substantially delay the recovery of Maui's dolphins?

30 MR VENUS: Yes, I read that.

MR CURRIE: And she said, "This makes it even more important unusual to take the precautionary approach"?

40 MR VENUS: Well and therein lies the problem. I think, you apply the precautionary approach in that sense, you'd do never do anything at all, ever, and I am interpreting this precautionary approach in terms of looking at the likely risk.

45 Now, there is – the threat management review group, identified a likely density of Maui's dolphins in one per 2,000 square nautical miles in that area south of Cape Egmont.

I think it is reasonable to apply a risk assessment and have a look at likelihood of encountering a Maui's dolphin, and it's extremely low.

5 MR CURRIE: Well let's look at the witness statement then, I think you have it in front of you now, don't you, paragraph 18, of which states "that there is also a growing body of evidence that Maui's dolphins can occur further offshore than 100 metre depth contour, there are two Maui's dolphins sightings in water, more than 100 metres depth off Taranaki", it says that doesn't it?

10

MR VENUS: But that's what it says there, yes, that's right.

MR CURRIE: That's what was agreed.

15 MR VENUS: Yes, that's right, it says that.

MR CURRIE: And are you aware that the protected area for Maui's dolphin extends to Hawera?

20 MR VENUS: No I didn't think it extend to Hawera yet, but - - -

MR CURRIE: Okay, you don't know?

25 MR VENUS: No I don't know.

MR CURRIE: Okay. I'll move on then, did you read the concerns expressed by Liz Slooten, Professor Wursig and others, that if Maui's dolphins were to move away they move to an area where there's greater risk of fishing or predators, are you aware of that evidence?

30

MR VENUS: Yes, I did read – I am aware of that evidence, yes.

35 MR CURRIE: So in paragraph 16 when you say "And in any event, my reading of the evidence is that Maui's dolphins would move away from the noise source if they weren't happy", do you accept that the experts say that may not be a good thing if they move away, that there may be hazards caused to those Maui's dolphins by moving away?

40 MR VENUS: Well if they were there in the first place. Secondly, my comment relates to the effects of noise on dolphins and I think the point there is that the marine mammals would avoid the disturbance. So they wouldn't necessarily move away to an area of high risk.

45 MR CURRIE: They wouldn't necessarily, but they may, that is the evidence of Professor Wursig and Ms Slooten, isn't it?

MR VENUS: That's what it says, yes.

MR CURRIE: And these witness statement also concluded that an aerial survey with much higher sighting effort will be required to detect the presence of Maui's dolphins in the South Taranaki Bight, didn't it?

MR VENUS: Well I state that in para 15 of my evidence.

MR CURRIE: Yes. The aerial survey by TTR only detected two of the most common marine mammals, didn't it, common dolphins and fur seals?

MR VENUS: That's correct.

MR CURRIE: So with only 55 Maui dolphins left, I put it to you, you would need a much more intensive survey to detect such a rare species in the area.

MR VENUS: Well that's exactly what I'm trying to say in my evidence, I might have not phrased it properly but yes I quite agree with you.

MR CURRIE: So an acoustic survey which was agreed in the joint witness statement was not undertaken by TTR was it?

MR VENUS: No it was not.

MR CURRIE: And it would have been more likely to detect Maui's dolphins would it not, according to the expert witness statement?

MR VENUS: Where does it say that?

MR CURRIE: In paragraph 16, "The likelihood of detecting Maui's dolphins would be higher than for a visual survey", as has been shown in previous studies for Hector's dolphins off Banks Peninsula.

35 **[3.40 pm]**

MR VENUS: Yes, if Maui's dolphins were present then a passive acoustic monitoring survey would have found them. But I take you back to the threat management panel's report in figure one, which talks about the likely density of blue whale's in the area, and one Maui's dolphin in 2000 square nautical miles is not a high density.

MR CURRIE: But an acoustic survey wasn't done by TTR was it?

45 CHAIRPERSON: Mr Currie I think you're - - -

MR CURRIE: Okay, I'll move along.

CHAIRPERSON: Thank you.

5 MR CURRIE: All right. So moving along to benthic effects there, you say in paragraph 25 of your summary, you say that "following cessation of activities there will be no residual effects of the operation once recolonisation of the operational area has occurred." Do you base your evidence on the recolonisation experiment?

10

MR VENUS: No, I do not.

MR CURRIE: What do you base it on?

15 MR VENUS: I base it on my – well firstly I attended both sessions of the benthic experts, plus I base it on my own experience involved in estuarine and marine resource consent projects throughout New Zealand.

20 MR CURRIE: I see, so did you read or were you familiar with Dr MacDiarmid's evidence saying that "we tried to conduct a suitable experience on the South Taranaki Bight, but the exposed nature of the area meant we couldn't keep the experimental sand in the containers." So the simple experiment wasn't done was it?

25

MR VENUS: Well that's correct the experiment wasn't done. But the purpose of that experiment was not to look at recolonisation rates, the objective of that experiment was actually to look at the difference between sand containing iron ore and sand that iron ore had been extracted from, that was the objective of that. It's not a recolonisation experiment.

30

MR CURRIE: So there was no evidence onto which you can base a statement that recolonisation can be carried out in any particular timeframe, is there, that the DMC can conclude?

35

MR VENUS: Well, if I look at the joint witness statements conclusion about recolonisation, I think you'll – I can base it on that.

40 MR CURRIE: And do you know what they based the tenures on?

MR VENUS: Well I don't know, but you should have asked the joint witnesses because I'm taking a guess.

45 MR CURRIE: Well I'm looking at your evidence here, Mr Venus.

MR VENUS: I'm basing it on their statement.

MR CURRIE: All right. We'll move then. A couple of final questions. Do
5 you know what the bottom price or the lowest price of iron ore is
before your venture becomes uneconomic?

CHAIRPERSON: Is that a question for this witness?

MR CURRIE: Well I thought he was familiar with the operation, sir, but I
10 won't put it to him if he can't answer, all right. In that case I'll move
on.

Okay, a few questions about the conditions then, and I believe my other
15 friends will have some more questions. Looking at your condition 10
about the plume, were you here this morning when the discussions
went on between Mr Witte and the DMC?

MR VENUS: Yes, I was.

20 MR CURRIE: Do you agree with the proposition that the application made by
TTR is defined by its impact assessment? Or my question is, do you
agree with the proposition that the application made by TTR is defined
by its impact assessment?

25 MR VENUS: Well its defined by the impact assessment and the evidence as
presented at the - - -

MR CURRIE: Including the plume and the model.

30 MR VENUS: Including the plume and the modelling and all of the
information that's before them.

MR CURRIE: So do you agree then logically the discharges from the pipe, as
35 well as the extent of plume should be constrained by the state of the
evidence given to the DMC as a proposition?

MR VENUS: Could you just repeat that question?

MR CURRIE: Do you accept that logically the discharges from the vessel,
40 direct discharges from the vessel, as well as the extent of the plume
should be constrained by any consent that is granted?

MR VENUS: Yes, I do accept that.

45 MR CURRIE: Thank you. Do you agree that conditions can be imposed within
a 12 mile limit, such as on shipping, with respect to shipping?

MR VENUS: That is a legal question, you can put that to lawyers.

5 MR CURRIE: Thank you. And looking at the noise conditions that you propose, for example such as condition 103 where you set up various noise limits, I put it to you that these limits are nothing that will constrain noise, but are simply a statement about how much noise will be produced by the operation, what do you say to that?

10 MR VENUS: The condition that is there reflects the position of the experts on underwater noise. So I've adopted their condition.

[3.45 pm]

15 MR CURRIE: Some of the experts on underwater noise.

MR VENUS: No, no, the experts on underwater noise, okay. There were a number of parties involved in discussions but the experts on underwater noise agreed to the wording of that condition.

20

MR CURRIE: And do you not accept this condition would allow more noise than will be produced at the moment by your proposal?

25 MR VENUS: I am not an underwater noise expert, I have adopted the wording as recommended by those experts. That question would be best put to an underwater noise expert.

MR CURRIE: Yes, well I am obviously basing this on your proposed conditions, but thank you, I will move on.

30

No further questions, thank you.

CHAIRPERSON: Thank you, Mr Currie. Ms Jamieson.

35 MS JAMIESON: I might be 20 minutes, half an hour, and I just wondered whether it might be timely to have a short break, if you are intending to have one this afternoon.

40 CHAIRPERSON: Yes, thank you, so I think if you are going to be that long, we will take a break now, thank you. We will take a break, 15 minutes, back just after four.

ADJOURNED [3.46 pm]

45 **RESUMED** [4.01 pm]

CHAIRPERSON: Thank you everybody, we'll reconvene, Ms Jamieson.

MS JAMIESON: Thank you, good afternoon, Mr Venus.

5 Now I'm going to focus on your evidence as it relates to conditions which will come as no surprise, and just before we start I want to go through, if we could, the steps that have been followed in the preparation of conditions to date, so we all understand exactly where we're at now, we need to go back to the beginning and have a look at where we started.

10 Now, the impact assessment, I noted is submitted as part of the application - the round picture document - contained at page 312 a statement of "general approach" to conditions, that's 16.2, and at 16.3 it had some general conditions listed, and underneath that heading "General Conditions", we have a statement and that these condition -
15 or the - wording set out here, in relation to the conditions, is intended as a basis of consideration by the EPA and other parties and is not intended as the final wording suggested or sort by TTR.

20 And you'll agree with me, won't you that - and there was a draft environmental management plan attached to that, wasn't there?

MR VENUS: Yes there was.

25 MS JAMIESON: Yes, it's appendix 10 I think.

And you'll agree with me that at that stage, the EMMP and the conditions - the "general conditions" as they were then termed - were schematic, weren't they, they were very high level?

30 MR VENUS: Yes I agree.

MS JAMIESON: Yes. So the next statement of conditions we've got, was attached to your evidence-in-chief and in your evidence-in-chief at
35 paragraph 29, you set out your approach in the - so TTR proposes measures to avoid, remedy or mitigate adverse effects and achieve the purpose of the Act by seeking consent conditions and monitoring them in accordance with a management plan and this is referenced to the EEMP, and we had copies attached to your evidence of an EEMP, a
40 slightly revised draft and some more conditions, didn't we?

MR VENUS: Yes that's correct.

MS JAMIESON: Yes. And attached – that draft of conditions contained the same qualifier, didn't it, that the wording set out here is intended as the basis of consideration by the EPA and other parties and is not intended as the final wording suggested or sought by TTR, it's correct?

5

MR VENUS: That's correct, yes.

MS JAMIESON: Now the TTR evidence from technical experts didn't propose detailed conditions in relation to their subject matters, did it?

10

MR VENUS: No.

[4.05 pm]

15 MS JAMIESON: And you attended various caucusings, as we've heard, and you attended, obviously the caucusings of the conditions experts. And that caucusings did two things, didn't it? It first discussed the approach on an issue about conditions on an issue by issue basis. Didn't it?

20 MR VENUS: Yes, it did.

MS JAMIESON: And it outlined some draft conditions, which is Appendix O, which we've heard a bit about today.

25 MR VENUS: That is correct.

MS JAMIESON: Yep. But that wording wasn't suggested or sought by TTR was it? That was your view, wasn't it?

30 MR VENUS: Well, that's right, because I had signed the Witness Statement and I was there as an expert.

MS JAMIESON: So the next set of conditions we have were circulated yesterday with your evidence, wasn't it?

35

MR VENUS: Yes.

40 MS JAMIESON: Right. And these conditions ... Obviously you are appearing here today as an expert, so obviously you would agree with me that you're putting forward to the decision making committee that these are your expert opinion that these conditions are appropriate.

MR VENUS: Yes, I am.

45 MS JAMIESON: So, can you please help us with whether or not these are now the conditions proposed by TTR?

MR VENUS: Yes, they are.

5 MS JAMIESON: They are. So, when in reply to some questions by my friend
Mr Currie and in your evidence today, you used the term “we” to refer
to what has happened with the Conditions: We propose; We anticipate.
Can you please explain to us what you mean when you use that term.

10 MR VENUS: Yes, I mean by that term “I”.

MS JAMIESON: So, you don’t mean, we, as in TTR and I.

MR VENUS: No. No. We mean I as in, me.

15 MS JAMIESON: Me. Okay. Thank you.

20 Now, looking back over the evolution of conditions that we have just
outlined. I put it to you that without a clear indication of what has been
proposed by TTR, discussion about conditions during the course of this
hearing has proceeded in somewhat of a vacuum.

MR VENUS: Well, discussion has proceeded leading on from the Joint
Witness Statement. A draft has been worked on. And I have been
talking to Mr Witte in terms of the wording of those conditions.

25

MS JAMIESON: But the first statement that the decision making committee
and submitters collectively have got about the TTR proposed
conditions and any form that TTR was prepared to put its name too,
without a qualifier, came yesterday. Didn’t it?

30

MR BEATSON: Sorry, can I just make a point? There isn’t a qualifier. And
that has made it clear that we are still listening and we are still prepared
to update these and through the conclusion and I don’t think there is
anything wrong with TTR putting forward conditions as a draft for
discussion on the basis that they are still open for discussion.

35

CHAIRPERSON: And I’m happy they are open for discussion. I am assuming
the point that Ms Jamieson is making is that these have been
developing as the hearing is progressing and what was dealt with in
terms of the impact assessment was something much more general and
this is just developing on the go.

40

MS JAMIESON: I guess my point, and it is really one that I can develop in
submission is that we have started from an incredibly low base in terms
of the submissions that were submitted as part of the impact
assessment. But I don’t need to labour it any more. That’s fine.

45

MR VENUS: Could I just elaborate a little bit? That I haven't been doing these conditions in complete isolation from the applicant. I have been talking, in relation to operational matters, of course, I have been talking to the applicant's engineers and so on to make sure that the conditions. Because one of the basic principles of conditions is that they have got to be workable. So, I've had to sort of give that some consideration, or I've taken advice on operational matters as well. But they are conditions that I have put together.

10

[4.10 pm]

MS JAMIESON: Thank you. And just so, for the purposes of getting ourselves orientated, can you confirm that the most recent version of the EMMP available to the decision making committee and submitters is that attached to your 17 February evidence.

15

MR VENUS: That was a draft. But, what has transpired after that was the Joint Witness Statement in relation to mitigation. The EMMP document itself has been subsumed, if you like, into the detail of the conditions as proposed now.

20

Sorry, could Mr Currie be asked to just move a bit, I can't see Ms Jamieson.

25

MS JAMIESON: That's a good idea.

MR VENUS: So the content and the detail from the EMMP has, and I undertook it myself, to take those across into the wording of the Conditions, rather than having a plan which I envisage will be prepared by a technical peer review group. So draft, as such, something prepared by me, wouldn't have much status. So, I've adopted the approach of taking the objectives and the detailed elements of the EMMP (NOISE 1.16) into conditions. So, we should be looking now at the conditions that I've tabled.

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35

MS JAMIESON: Okay, so we don't need to refer to any other document.

MR VENUS: No.

40

MS JAMIESON: Okay. Thank you.

Now, going to the starting point of conditions. Obviously conditions are important, and you've said that. In paragraph 30 of your Evidence In Chief, robust and workable consent conditions are fundamental to ensuring actual or potential adverse environmental effects of an activity

45

are appropriately avoided, remedied or mitigated. Is that your still your view?

MR VENUS: It is my view. Yes.

5

MS JAMIESON: And you, along with the other attendees at the conditions caucusing agreed that an RMA approach to best practice should be applied to conditions on marine consents under the EZ. Didn't you?

10 MR VENUS: Yes, I agree.

MS JAMIESON: Now, as I understand it, TTR's position and I think it widely accepted, is that the significant effects, or the effects from the proposal arise from the plume in large part. And, as I understand the proposal in
15 your conditions and from TTR, it is that these effects of the plume be adaptively managed.

MR VENUS: That is correct.

20 MS JAMIESON: Yes. Now, you agreed with the definition of adaptive management in the Joint Witness Statement and Mr Witte read that out today, so I don't think we need to go back to it, but essentially, the shorthand is structured learning by doing. Isn't it?

25 MR VENUS: Um, in shorthand, yes.

MS JAMIESON: I mean, we can look at the whole quote if you want to. I'm happy to do that.

30 So, what I want to focus on, in this part of our discussion, is adaptive management and how adaptive management is put together in the conditions that we now have before us. So I think we need to briefly go back to the Impact Assessment and look at how this is developed. And I'd like you to have a look, if you've got it, the Impact Assessment,
35 Section 16.2 on page 312. And this sets out the approach at that point in time, doesn't it? It says, I'm looking at paragraphs (a) and (b): "TTR's proposed consent condition framework is based around the following steps: where practicable, set defined performance criteria and conditions, recognising that monitoring and review will be necessary to
40 ensure that conditions remain relevant to effects once operations commence and (b) where final criteria or standards are not yet able to be established, or where the extent or nature of effects is based on a worst case assumptions, and are intended to be clarified at a later stage, then the conditions should set out" and a number of steps are set out,
45 and that effectively is your adaptive management process, isn't it? (a) and (b) together? At that point?

MR VENUS: Yes. Yes, that's right.

[4.15 pm]

5

MS JAMIESON: Now, to look at the adaptive management approach that is now proposed, I think we need to start with Condition 8 in your latest version, yesterday's version. And this is the one that you read out, I think, in your summary, so we don't need to read it again. But essentially, the proposal is that environment effects of activities authorised under this Consent will be managed under a risk based tiered approach around the following. And there we have a list of those, and I'll just summarise, qualitative environmental performance objectives, baseline monitoring, quantitative objectives, operational monitoring, adaptively managing the operations and review.

15

Now, while you've used adaptively managing in E, as a particular part of this process, you'd agree with me, wouldn't you, that 8 as a whole an adaptive management framework proposed by yourself?

20

MR VENUS: Yes.

MS JAMIESON: Yes. Now, each of those steps (a) to (f) is important, aren't they, in an adaptive management framework?

25

MR VENUS: Yes.

MS JAMIESON: So, I want to look at what the Conditions say about each of these steps in turn, briefly, if we might. So, the environmental performance objectives are in Condition 9, aren't they?

30

MR VENUS: Yes.

MS JAMIESON: And you touched on them briefly in your summary. (b) the baseline monitoring, is in Condition 76, I think, and probably following under a heading Pre-operational Baseline Monitoring Plan.

35

MR VENUS: Yes.

MS JAMIESON: And the objectives for that plan are set out at 77. And that is to establish the monitoring regime basically, isn't it? That's what that plan is designed to do?

40

MR VENUS: Yes.

45

MS JAMIESON: Now, there is some information about the monitoring that should be included in that Pre-operational Baseline Monitoring Plan in the Conditions. But very limited information, isn't there.

5 MR VENUS: That's correct.

MS JAMIESON: Yep. In fact, the only information, really, about the detail of the monitoring that is actually proposed to be undertaken is in relation to the benthic environment where you've picked up the suggestions of the joint witness statement. That is there, isn't it, and that is where that material comes from, isn't it?

MR VENUS: Correct. And in relation to marine mammals.

15 MS JAMIESON: And I was just about to come to marine mammals, where that information has been provided by the ongoing work that the Marine Mammals Expert Group has been doing, isn't it.

MR VENUS: Correct.

20

MS JAMIESON: Now, turning to (c) in your list of your adaptive management framework, we are going back to Condition 8. The next step is to develop quantitative measures for relevant physical and biological indicators as trigger indicators or values to inform compliance with the environmental performance objectives.

25

Now, if I'm correct, this is to be done inside a document called an EMMP, isn't it?

30 MR VENUS: No, if you have a look at Condition 77(b).

MS JAMIESON: 77(b)?

MR VENUS: Yep.

35

MS JAMIESON: Well that's monitorings to provide the basis for the quantitative triggers, but actually, deciding on those triggers is in Condition 121, I think. Or 122 (b).

40

[4.20 pm]

MR VENUS: Well if it is. To step through what I am intending to do, rather than. Perhaps I can explain the process. Is that in Condition 11 or conditions 10 and 11 talks about "development of trigger values".

45

MS JAMIESON: Yes.

MR VENUS: Condition 44 comes back to the peer review group.

MS JAMIESON: Yes.

5

MR VENUS: And condition 44B is for the peer review group to make recommendations and EPO, quantitative trigger indicators and that's the process derived from information collected from the baseline monitoring programme.

10

MS JAMIESON: Sure. But the intention is that those figures be included in an EEMP, isn't it?

15

MR VENUS: Sorry, to include them, yes, I'm sorry I thought you were talking about - - -

MS JAMIESON: Yes, that's where they're going – I mean there's a process that will inform them, but they're actually – we're actually going to find them in the EEMP, aren't we?

20

MR VENUS: Correct, yes they will.

MS JAMIESON: Yes. And as we know there aren't any triggers proposed by TTR today.

25

MR VENUS: Well there's a noise limit and there's Anzac guideline limit for water quality – there are some numbers that are adopted, but in general that's correct, that would be - - -

30

MS JAMIESON: Well let - - -

MR VENUS: - - - the proposal as set out in these conditions is for the qualitative objectives, yes.

35

MS JAMIESON: Well let's explore the noise one for a minute, because the noise one, the noise control, is not part of this adaptive management framework is it, it sits outside your process – it is a limit that's set by a condition, you're not proposing to adaptively manage your operation in respect of that?

40

MR VENUS: Well if we use that as an example, the adaptive management will be directed at achieving the environmental performance objectives, and that's one measure, is we're not meeting our – if there's an exceedence of the noise limit, then there's a need for adaptive management to respond to operations and make sure that the operation

45

meets that limit. So I don't see it as an inconsistent with the approach that we've got here.

5 MS JAMIESON: I'm not suggesting it's inconsistent, Mr Venus, at all.

MR VENUS: Sorry.

MS JAMIESON: I'm suggesting that they do slightly different things, so - - -

10 MR VENUS: Yes, they do, yes.

MS JAMIESON: Yes, yes. So D, the next step in the adaptive management framework is operational monitoring, isn't it?

15 MR VENUS: Correct.

MS JAMIESON: And that will be directed again by the EEMP and there's some, if I say, might say "a few" directives about that monitoring in condition 128 onwards?

20 MR VENUS: Yes.

MS JAMIESON: Yes. But there's no repeat of the requirements that are included in the pre-operational baseline monitoring plan in respect of monitoring for marine mammals or the benthic environment, is there, in your current proposal? There's no detail, there's no requirement - - -

MR VENUS: No, no, that – well there is a requirement for it, I mean they're identified as matters that will be addressed in 131 as protocols, but no, you're quite right, there is not the detail in the operational one, it's in the baseline one, correct.

MS JAMIESON: All right. And E, the adaptively manage, the operation, which is effectively what some people I think has commonly been termed "responses", those responses have to be detailed in the EEMP, don't they, and that's in 122(c) which is one of the objectives for the EEMP.

MR VENUS: Yes.

MS JAMIESON: Yes. And then we've got "review" which I haven't looked up where it is, but I presume it's somewhere at the end, so – "review" 141(a) – 141 and 142 – well actually and review inside the adaptive management framework, it is going back to look at those triggers and things as well.

MR VENUS: That's right.

5 MS JAMIESON: So reflecting on how condition 8 is expressed through the conditions that you've proposed, I put it to you that if the activity is approved with this suite of conditions, the adaptive management process, the DMC will effectively be approving, comprises at the moment some qualitative objectives and a process through which it is intended the rest of the parameters for the adaptive management regime will be filled in.

10

[4.25 pm]

MR VENUS: Yes.

15 MS JAMIESON: That is what they are going to approve? Now, your supplementary brief refers in two places to the Crest decision, doesn't it?

20 MR VENUS: Yes.

MS JAMIESON: Yes, and you gave us some, we have talked about Crest obviously today and I just thought it would be useful to clarify your role in the Crest. I think you said you had five years involvement in it?

25 MR VENUS: That's correct, I was there lead environmental consultant for that project.

MS JAMIESON: Did you write the conditions for that?

30 MR VENUS: No, I worked on it jointly with the main parties with the Northland Regional Council and a person from DOC named Andrew Riddell.

35 MS JAMIESON: But you were the lead person for the applicant at that point?

MR VENUS: That's correct.

MS JAMIESON: You held the pen, if I might say?

40 MR VENUS: That's correct.

MS JAMIESON: Okay. Let's talk a little bit about what the Crest application actually involved since we have talked a lot around it today.

45

And you feel free to remember details, I have taken what I thought were the essential points but there might be more.

5 It is an application to establish underwater marine turbines in the Kaipara Harbour?

MR VENUS: Yes.

10 MS JAMIESON: And because we are talking about adaptive management, I will focus on that aspect of the Crest thing, but it involved the staged implementation of turbines, didn't it?

15 MR VENUS: That's correct. The original application was to install 200 turbines measuring 30 metres high. The issue that arose through that hearing was there was no operational information at all, that was available and there was relatively little environmental information either.

20 MS JAMIESON: Right.

MR VENUS: Distinguishing it from this project where there has been a collection of extensive environmental information and modelling and there is a much better understanding in this situation than there was in that situation of the environmental implications of the project.

25 MS JAMIESON: So the original application you have said was for 200 - - -

MR VENUS: Correct.

30 MS JAMIESON: - - - what was approved in the end was a first stage of three turbines, wasn't it?

MR VENUS: Yes, it was three, correct.

35 MS JAMIESON: And ultimately that was to increase through a series of stage developments, to 140?

MR VENUS: That's correct.

40 MS JAMIESON: Now I have got the Crest decision and conditions here for us to have a bit of a closer look at and I would like to hand those out and my esteemed junior will help you with that.

45 So there are two things here and they look a lot alike.

CHAIRPERSON: So we have the interim decision and the final decision?

MS JAMIESON: That's right. I will be the first to admit to the difficulties of comparing conditions for different things in different places at different times and I am not intending a comparison at any degree of subject matter, but I do want to look at how this issue of adaptive management was dealt with in Crest.

Mr Venus, you will agree with me that in the Environment Court in the Crest case, was presented with conditions structured similarly to those in the TTR consent. There was some conditions and an EMP, that was how it was presented in draft form when the matter first went to the Environment Court?

[4.30 pm]

MR VENUS: Yes, that's right.

MS JAMIESON: Yes, that's fine. And in that case, the court wasn't minded to approve conditions without also approving the EMP, and that's contained in the interim decision – and I just like you to confirm my understanding of the – what happened there.

Now correct aren't I that the court's reasoning for that was set out at paragraph 222 of the interim Crest decision, and that paragraph says, "In other words ..." and they were talking about concerns that in that case were raised by the Director General of Conservation about the detail, accompanying the adaptive management regime, "In other words, we support the position that a fully fleshed out EMP should be prepared at this juncture.

Too many questions are left presently unanswered with parties, including the respondent indicating that there may even be some difficulty in defining them. The question of whether consent should be granted at all, hinges on an ability to create an EMP that will adequately address the issues. We are not prepared to effectively transfer responsibility for this crucial area of assessment to a delegated officer of the respondent.

At the heart of the issue in paragraph 223, is the concept of adaptive management, which is what the parties have generally had in mind when debating some uncertainties of effects in the case."

So that was the reason why the case proceeded on an interim and final basis, wasn't it? That they wanted some more information about the adaptive management regime?

MR VENUS: Yes, that was true, but that was in the – yes, there was a significant absence of specific information in addition to that - - -

MS JAMIESON: Okay, thank you.

5

MR VENUS: - - - but that's correct.

MS JAMIESON: So we need to turn to the other decision that I handed out, if we could, and as a way of looking how the court resolved the matters of uncertainty around the adaptive management plan, I think it would be useful for us to go back to your steps that you outlined in condition 8 proposed, and see what the Environment Court did in Crest with the same steps – what they had in front of them, what they effectively approved.

10
15

MR VENUS: Certainly.

MS JAMIESON: So unfortunately the EMP component of this decision is not page numbered – it is towards the back and I'll refer to section numbers as we go through.

20

CHAIRPERSON: So that's the one that referred to the environmental monitoring plan with "draft" crossed out?

MS JAMIESON: That's the one and with the court's seal on it, yes.

CHAIRPERSON: Right, thank you.

MS JAMIESON: So what I need you to turn to is a condition – partway through there's a section that starts out at 2.4 and you start there.

30

CHAIRPERSON: You may just need to give us a minute till we get it – 2.4.

MS JAMIESON: Okay. Now that sets out – that 2.4 we've got the steps that the court was looking at, effectively it's the equivalent of your 8, isn't it, but that's the steps that they understood were needed to meet an adaptive management framework.

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[4.35 pm]

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And then in 3 we come to objectives, and in section 3 they're listed in table 5, and I want to come back to objectives in a minute, but there they are, stated there.

45

5 The next step in your process is base line monitoring and that is addressed in Table 7 in these Conditions. Oh, there is a page number on it, I beg your pardon, it looks like page 21. And you will see there the information that the Environment Court had available to it at the time of approving consent about what sort of baseline monitoring would be needed to inform the adaptive management approach that was being set up. So, for benthic, we had the frequency, we had the near field, how many times, how many places, and we had the sampling parameters all identified. Table 7.

10 So, let's look at the next step in your process. It jumps around a bit, because it didn't quite follow the same order, but that's the evaluation criteria, or trigger levels.

15 And they are discussed in Section 7 on page 38. And then they are listed in Table 10. And obviously they are directly related to the objectives that have been set. Those parameters.

20 We need to go back again to look at your next step, which is operational monitoring, which is Section 6 and Table 9. And again, the parameters that will be monitored to inform the adaptive management process that the Court's approving are set out there in some detail. Aren't they?

25 And, lastly, on your list, is the issue of responses, operational adaptive management. And that is dealt with only briefly in these Conditions at Section 8. But, though brief, it does give an indication of the sort of responses that the Court was anticipating would be appropriate should triggers be exceeded.

30 That's essentially how Crest dealt with adaptive management, isn't it?

35 MR VENUS: Yeah. With one exception. I think if you have a look, and I'm just trying to find the condition. The first step, which I've identified as (a) specification of qualitative environmental performance objectives, is in Condition 5 and I've just got to find it, as there are two conditions.

40 So, if we look at. Again, it's not particularly well worded, but there are two conditions in this final decision. The main one is the condition that relates to install the generator and it was the one that was the Regional Council condition, so it is in about the middle of the final decision document and its Condition 200661607603 and it's in an unnumbered page, but I think in terms of a decision it's probably starts at page 13.

45 MS JAMIESON: I beg your pardon, I didn't catch it?

MR VENUS: Yeah. I'm just trying to get the page referencing in this, because it's a bit complicated. But if we have got it, it's a consent that is to install an array, occupy the sea bed, extract energy, and so on. And it's a condition that is about 20 pages in from the front of the final decision.

5

MS JAMIESON: Okay, has it got a number?

[4.40 pm]

10 MR VENUS: It has a page 1 at the bottom of it. And it is Resource Consent column 20061607603.

MS JAMIESON: Yeah, I've got that.

15 MR VENUS: Okay. Now on that consent, if you have a look at Condition 6. It sets out two conditions precedent. Now in that case what the Court did, or what they agreed to, was that there would be, the final agreement to proceed was actually hinged on the outcome of the baseline sampling. So, they found that, whilst there was a reasonable argument to grant the consents, they felt they had insufficient information and completely distinguish from this situation, we've had expert witness statements right through the process. So in that case they said that as a condition precedent for starting that the Northland Regional Council should be satisfied that implementation will give rise to effects that are less than
20 minor on cetaceans, fish (**INDISTINCT 1.09**) or commercial fishing. So stage 1(a) was the very first staging of the project. That's Condition 6 and it's on page 5.

25

30 So, what I'm saying is those are the qualitative objectives that were set, in this case by the Court. And I'm saying, those are the qualitative objectives that I am recommending in my set of conditions that the decision making committee should be adopting in respect of the environmental objectives, if you like of the project. And that a process then gets developed whereby the detailed trigger values are set.

35

40 And if you have a look at the Environmental Management Plan where it sets out, I think it was Condition 7. Going back in history a bit here, but I think it was Condition 7. It is Table 10. Where if you have a look at Table 10 it says what the objective is and what the evaluation criteria are. And those evaluation criteria are set for benthic habitat, plus or minus .05, probability level effect of no change. Those were developed after the interim decision by various panels of experts with the idea that that would set the scene for the baseline monitoring. What we are saying in this case is, the Committee sets the environmental objectives
45 with a defined baseline monitoring programme and the results from that

that baseline programme are taken by the Peer Review Group to set these very conditions themselves.

5 MS JAMIESON: Yes, so you'll agree with me then, because. Well let's go back. Let's have a look at that Condition 01 that we found on page 1 in the thing. Now that reference there isn't an objective for an adaptive management framework, is it? It is a condition about whether or not anything will happen, at all, isn't it?

10 MR VENUS: I'm sorry, I'm confused of your 01, where is that?

MS JAMIESON: Well, that's the one you just took us to.

15 MR VENUS: Oh yeah. Right. I'm with you there. Yes.

MS JAMIESON: So, I'm talking, not about a condition that may or may not trigger the consent to actually take effect, but the adaptive management regime once it follows it once it is in place.

20 MR VENUS: Well, alright, but what ...

MS JAMIESON: Sorry, I might put it differently. If by the time you get to adaptive management in Crest, you've already satisfied that condition, haven't you?

25 MR VENUS: Well, it would be the same case here. Because what happens in this situation is that the environmental objectives are set by the Committee and it goes through that process. I've just said, using a defined process, using an independent peer review group and the involvement of the EPA in the decision making role.

30 MS JAMIESON: Okay, well going back to the matters that I just took you through in terms of the details that were provided in the adaptive management regime, which in this case is set out in an EMMP approved by the Environment Court, I put it to you that there is a stark difference in the information available to the decision maker at the time the consent is granted between the Crest conditions and what's is proposed now by TTR.

40 **[4.45 pm]**

MR VENUS: Yes, there was a very stark difference between the two. That is correct. In the sense that in this case there is a substantial body of information and evidence and expertise looking at the potential effects and expert witness statements predicting effects of low likelihood, less

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than minor effects, and so on. And so, there is that body of info can be used to inform these objectives.

5 MS JAMIESON: Well, with respect Mr Venus, there is some irony in that answer, isn't there? Because you're saying that there is a lot of information to inform the decision, but not enough information to inform the adaptive management process that TTR is asking the Committee to approve now.

10 MR VENUS: No, there is enough information to satisfy the Committee that setting those environmental performance objectives are realistic and that there is a process that we are not going to go into a process of just plucking numbers out of the air, to follow Dr Huber's point, that there needs to be a process to develop information on environmental
15 variability come up with realistic trigger values.

MS JAMIESON: Okay, we'll move on. I want to look very quickly at objectives and turn back to that table 3 in the Crest decision, if we could. And that is on Section 3 of the EMP. And there is a Table 3 –
20 Environmental Component Objectives. Table 5, sorry, Section 3. Now before we look at that deeply, we've heard from a number of witnesses, including yourself, about the reasons why quantitative objectives are not possible at this point, haven't we? And the reasons that are consistently given is that there is not enough information to set sensible
25 ones now.

MR VENUS: That is correct. Yes.

30 MS JAMIESON: Well, I put it to you, that that tells us the answer to the "why" aren't they set now. But it doesn't tell us the answer to the "should" they be set now. In terms of ideal decision making reflecting on RMA principles.

35 MR VENUS: And, I think there is a "could" they be set now, as well. And I think it is pretty clear from the evidence that it is just not appropriate to set quantitative values now.

40 MS JAMIESON: Well, we might be getting tied up in terminology, but the difference between could because can't, and could because we shouldn't, might be one that we need to reflect on. But I put it to you that there are actually a number of matters that need to inform a decision about whether quantitative or qualitative objectives should be approved at the time the decision is being made.

45

5 Have you considered Mr Witte's evidence on this, at paragraph 36 of his summary. "I agree that in some cases qualitative objectives may be appropriate. That decision would need to be on an effect by effect basis, considering factors such as the amount of information available, the degree of scientific and stakeholder agreement with the objectives, the extent to which the proposed monitoring framework will address effects, the duration of the activity causing the effect and the likely seriousness of the effect."

10 I put it to you that those are the factors that the Committee should consider when they decide whether the qualitative objectives are sufficient or quantitative ones should be set.

15 MR VENUS: Yes, I agree.

MS JAMIESON: Now, maybe we don't need to. We've already looked at Table 3, so I won't take you back. You discussed with Mr Witte the need to compare the two in terms of the language used this morning, so I'll leave that to you.

20

[4.50 pm]

25 Now, I want to move to a different, but related issue, about conditions. And look closely at the conditions in 2 to 5 of your draft. And I wrote that sentence before you updated your evidence just before, so let's just have a look at where we are at now.

30 So what I want to talk about is PSD and the conditions defining the consent. And you'll accept that it's common for conditions to specify the essential components of the activity being consented.

MR VENUS: Yes. Correct.

35 MS JAMIESON: And in this case the essential components which influence the plume, duration, volume, mass of the discharge, location of the discharge, they are addressed in Condition 3 and to that we can now add PSD, can't we?

40 MR VENUS: That is correct, yes. In using the wording suggested by Mr Witte in his alternative.

45 MS JAMIESON: Thank you. Now, I just want to make clear, because of some of the comments in your Summary Statement paragraph 32 at point 8, where you. If we turn to that. Now you are obviously aware that the Director General was seeking, and we are now, hopefully, on the way to agreeing, to add PSD and include limits related to that. So, you

understood the Director General seeking that and you understand as well that the Director General, just to be clear, isn't seeking that as an alternative to monitoring the effects of the plume, it is both.

5 MR VENUS: Yes. I understand that completely.

MS JAMIESON: Now, in your summary of what the Director General is asking for, the second paragraph says, I understand the Director General of Conservation is promoting a series of stringent limits on
10 mass flux and particle size distribution

MR VENUS: Mr Chairman, could I just interrupt for a second. I deleted that. I said that was deleted.

15 MS JAMIESON: I think you deleted most of the next paragraph - - -

MR VENUS: Yes I have.

MS JAMIESON: So, I wasn't going to do that, but you did read that one about
20 the stringent limits. And I just want to make a simple point about it, if I might, or put that to you - - -

CHAIRMAN: Just to come back to us, we are on 32 on the Table number 8.

25 MS JAMIESON: Yes, that's right, the second paragraph we have just talked about. Okay. Now you understand that the stringent limits being sought by the Director General are based on the numbers provided by TTR in the revised particle size distribution memo, don't you.

30 MR VENUS: Yes, I do. Yes.

MS JAMIESON: Now, that memo is not before the Committee at the moment. It was referred to in evidence from Dr Hadfield and it was referred to in the Joint Witness Statement. But, I think for the purposes of
35 completeness, it would be useful for you to have it and I have some copies here, because it contrasts with the earlier memo that was on website for 21st June, which covers the same subject matter for the original plume. And I don't want to make more of the point like this, but just so that it is clear where these numbers are coming from.

40

MS WRATT: Is this the information that went into the revised date?

MS JAMIESON: This information has come from TTR at our request.

45 MS WRATT: But this is what went into that revised lot?

MS JAMIESON: That is my understanding, yes. And this is the information that was referred to, but it hasn't been put to you, as far as I understand.

5 So, we need then to look at how, because there is obviously some agreement as to conditions that should be included, we need to look a little more closely at how it is to be included.

[4.55 pm]

10 And, if we turn back to the Section 8 and paragraph 32, and looking at the last statement. It says, "You have recognised there is merit. Accordingly, I have recommended in Conditions 3 and 5 a set of discharge parameters defined as long term averages which generally reflect the nature of the discharge put to the DMC. I put these forward
15 in the context of describing the activity generally, authorised, rather than as tight compliance limits, such are as suggested by Dr Longdill."

20 Now, I think, if I'm correct, that the result of your changes that you took us through at the end of your summary had the effect of deleting proposed 5 and putting a replacement in Condition 3. Is that correct? Is that how you described it?

MR VENUS: Deleting 5 (a) and (b).

25 MS JAMIESON: Right, and putting the whole matter in 3, or leaving 5 separate.

MR VENUS: No what I proposed was to delete 5 (a) and (b) and to delete 3 (d) and (f).

30 MS JAMIESON: Right.

MR VENUS: And then replace those deletions with the revised wording from Mr Witte's.

35 MS JAMIESON: So the substance of this will be contained in Condition 3 in the end, I think from this.

MR VENUS: Yes, it will.

40 MS JAMIESON: That's right? Now I confess to being a little confused as to what you are actually proposing in terms of whether or not this should be a limit that is a compliance limit, a hard limit. So, what you have said in here implies something less than a compliance limit, and we
45 need to look, too, at the effect of Condition 4 in this draft.

MR VENUS: If I can just answer the first point. Yes, I am seeing it as a compliance limit. I'm suggesting that 4(c) be used as a method to determine compliance.

5 MS JAMIESON: Right. So, the bit I read of your evidence, I put these forward in the context of describing the activity generally, rather than as a tight compliance limit, such as suggested by Dr Longdill. That is no longer correct, is it?

10 MR VENUS: Well, it is correct. If I can just clarify. Dr Longdill had expressed the limit in terms of daily limits, in terms of tonnes per hour in a day, and in my Condition 4(c).

CHAIRMAN: This is the new 4(c) now, isn't it?

15

MR VENUS: Yep.

MS JAMIESON: Okay, so that's helpful. So, it's only not a compliance condition. So you're telling me now. Let's put it as a question, like this:
20 are you proposing that the matters that will be contained in 3 will be hard limits which define the consent?

MR VENUS: Yes, I am.

25 MS JAMIESON: So, what then is the effect of draft Condition 4? That condition says, the consent holder may vary operational methods from those set out in 3, subject to certification from the EPA that varied methodology will not result in potential adverse environmental effects which are inconsistent with the attainment of environmental objectives
30 set in Condition 9.

MR VENUS: Well, the basis of that is to enable the consent holder, if it can demonstrate that any changes are not going to have an adverse effect, that it can do those changes. It may want to change its operations
35 somehow.

MS JAMIESON: So, that could be done post decision in a discussion between the consent holder and the EPA?

40 MR VENUS: That's what is proposed there. Yes.

MS JAMIESON: So, I put it to you that that is not really a hard compliance level, is it?

45

MR VENUS: Well, actually it is. The numbers are a hard compliance limit and there is a process described to modify the operations. And I think that is pretty standard practice. I think that was the wording that was out of the agreed witness statement to, for the conditions.

5

MS JAMIESON: I'm just thinking about the effects of them as you've redrafted it and we can leave it at that. But, there is discretion there for that to be changed.

10

[5.00 pm]

Now I want to talk very briefly about two further matters related to PSD. Now 5C which will be 4C and you have touched on this is about the monitoring frequency and obviously we are not quite settled on that, but you would agree with me, would you not, that it would be sensible to relate the monitoring frequency, two factors such as the transportation, the times for transportation and dispersion of discharged fine sediments, so some of the actual factors?

15

20 MR VENUS: Yes, there are a number of factors that will fit.

MS JAMIESON: It is not just informed by operational constraints is it?

MR VENUS: Not just informed by operational constraints so will have a major bearing on it as well.

25

MR CHRISTENSEN: Sorry what condition was that that you were talking about?

30 MS JAMIESON: That is the new 4C which was 5C in the draft which is the frequency and type of monitoring that will be done on PSD.

MR CHRISTENSEN: I think it is the averaging period.

35 MS JAMIESON: Yes, and the issue is over how long it should be averaged.

MR CHRISTENSEN: Yes, it is not a monitoring frequency it is an averaging period.

40 MS JAMIESON: Okay, I beg your pardon, well it is how would we count it is it not, how to be reported that I what I am meaning. The second matter turns very briefly conditions 105 and 106 which relate to the grade control drilling. Now I think from reading these conditions the intention here is to provide a bit more certainty about the company's activities with respect to actual mining operations of the fines, is that
45 what they are directed at, the grade control drilling. I mean it could be

operational and not included in the conditions, but presumably it is included here because some sort of control is being proposed?

5 MR VENUS: That is correct, they are included here to provide some sort of control over the fines level being mined.

10 MS JAMIESON: You will agree with me then that in determining the monitoring of the fines it is not only the depth of the mud lens that is relevant is it? It is also how you define mud, what fraction of particle size and how much of the sample actually comprises mud that will inform whether or not, how much of a control that is on mining of the fines is it not?

15 MR VENUS: That is absolutely right, yes.

20 MS JAMIESON: Thank you. Now, I want to look at schedule 2 which you touched briefly on earlier which is the monitoring area boundaries and I think you said before that these were arbitrary and you had set them, is that right?

MR VENUS: That is correct, yes.

25 MS JAMIESON: You will agree that the boundaries of this monitoring are incredibly important, are they not?

MR VENUS: Well the boundaries are important, yes.

30 MS JAMIESON: That is right from both the applicants' point of view and in terms of managing effects. Now that map was not discussed with any experts at caucusing was it?

MR VENUS: Oh, absolutely not, no. I put it forward here.

35 MS JAMIESON: It has not been discussed with any experts since or not the Director General's experts?

MR VENUS: No, it has not, no.

40 MS JAMIESON: You will agree with me that the map there is difficult, well there is some deficiencies we put it to you in that map just immediately obvious from a quick look because it does not include the Waiinu Reef does it and you have actually got this before. I will just give it to the witness here. This is the map that was attached to Ms Hillock's summary of evidence-in-chief.

45 MR VENUS: Thank you.

MR VENUS: No, it is unclear from there, it may not include the Waiinu Reef, no.

5 MS JAMIESON: That is fine. I mean that is just an example of the care that would be needed if such a map was to be included in the conditions, is it not because the Waiinu Reef was one of the matters that the benthic experts agreed should be monitored and that is paragraph 101 of their statement. Have you got the marine mammals joint witness statement there?

10

[5.05 pm]

MR VENUS: Yes, I do.

15 MS JAMIESON: So I'm looking at appendix 2 to the marine mammals one.

MR VENUS: Yes.

20 MS JAMIESON: Now I'm not for a moment suggesting that it's the director general's position that monitoring should be confined to the area surveyed by Mr Cawthorn for the purposes of the marine mammal survey, but you'll agree with me that the area you've proposed as the monitoring boundaries does not even do that, does it?

25 MR VENUS: No, it doesn't.

MS JAMIESON: Yes, thank you.

30 MR VENUS: And it looks like this doesn't include Waiinu Reef either, the DOC one, the appendix 2 sorry.

35 MS JAMIESON: Well this was simply a map for blue whale and marine mammal purposes and not designed to anyway depict the benthic areas of significance, so we can do that.

35

40 Now there's just one more matter on marine mammals that I want to touch on. You'd agree with, wouldn't you, that in terms of informing the committee's assessment of the use and importance of South Taranaki Bight for marine mammals, we should look at what the marine mammals joint witness statement says, shouldn't we?

MR VENUS: Yes, I agree.

45 MS JAMIESON: And at paragraph 43 there, you'd agree that that was a very important statement of our current state of knowledge, it says "insufficient data are available for most marine mammal species that

use the South Taranaki Bight to determine their status, eg abundance or the significance of the location for them.” So that’s the best statement we’ve got of the knowledge about marine mammal use.

5 MR VENUS: It’s not clear whether that is an agreed statement by the experts, it’s a sentence and all the others say “the experts agreed that ...” and in this case it doesn’t say that, so I’m not sure what that’s intended to represent.

10 MS JAMIESON: Okay, well Mr Cawthorn said he agreed with it on the stand, and Dr Childerhouse didn’t express any disagreement with that statement when he gave his evidence, did he?

MR VENUS: No, I’m just referring to the wording of this statement.

15

MS JAMIESON: Okay. Thank you, I have nothing further.

CHAIRPERSON: Thank you, Ms Jamieson. Ms de Wit?

20 MS DE WIT: I want to look first at the issue of cumulative effects. So just looking at page 8 of your evidence-in-chief, if you have that there, you have that?

MR VENUS: Yes.

25

MS DE WIT: So this is a table setting out the issues and TTR witnesses, and there’s a gap there next to cumulative impacts, is that right?

MR VENUS: Oh, there is a gap there, yes.

30

MS DE WIT: And there’s no gaps next to any other issues?

MR VENUS: That’s correct.

35 MS DE WIT: And if you turn then to page 13 of your evidence-in-chief to point 11, second in that table, and the issue raised relates to cumulative effects and the response is that consideration was giving to cumulative effects of shipping noise, but in your opinion consideration of other cumulative effects is not warranted, is that your opinion?

40

MR VENUS: That’s what I wrote there, yes.

[5.10 pm]

5 MS DE WIT: And the impact assessment, perhaps I won't take you to it, but just do you recall that statement there about cumulative effects, there's two sentences on ecological cumulative effects, its page 302. Have you got that, top of page 302?

MR VENUS: Yes.

10 MS DE WIT: Now, is there any information about, for example the effects of this project on the benthic environment and the effects of trawling on the benthic environment?

15 MR VENUS: So can you rephrase that?

MS DE WIT: So this project will have effects on the benthic environment and other activity that has effects on the benthic environment in this area is trawling, there is no information on the cumulative impacts of those.

20 MR VENUS: No there's not, other than – we talked about, there was discussion in the fish group about the limited area, limited effect on fish of the activity.

25 MS DE WIT: Okay, but that's the effect of this activity on fish not the effect of trawling on the benthic environment.

MR VENUS: The effect of trawling, okay. Yes, that's correct, yes.

30 MS DE WIT: Okay, and do you have the joint witness statement, marine mammals there?

MR VENUS: Yes.

35 MS DE WIT: I'll point you to paragraph 78.

MR VENUS: Yes.

40 MS DE WIT: So that states that the marine mammals experts had insufficient time to consider the issue of cumulative impacts on marine mammals while recognising its importance they are unable to present advice on cumulative impacts.

MR VENUS: Yes.

45 MS DE WIT: So this is another potential cumulative impact that we have no information on?

MR VENUS: That's correct, there's nothing there on cumulative impacts on marine mammals.

5 MS DE WIT: And you're aware that the DMC is required to take into account cumulative effects?

MR VENUS: Yes, I agree that that's the case. I think part of the issue cumulative effects is looking at the individual effects that are potentially leading to be accumulated, if you like, in terms of overall cumulative effect, so there's been considerable attention to those individual effects, there's been some talk of for example, displacement of marine mammals if they were in the area being displaced to an area of higher threat. If that was an effect that's a displacement effect, but the risk of that's identified as life.

10
15

MS DE WIT: But despite if any challenges in identifying cumulative effects, it's still a matter than needs to be considered by the committee.

20 MR VENUS: Yes, I think there's sufficient information through the joint witness statements though, looking at the individual effects to reach a landing in terms of cumulative effects.

MS DE WIT: But if we don't information on other activities such as trawling then - - -

25

MR VENUS: Well we have got information on trawling, and the information we've got on trawling indicates that it's not a significant activity inside the project area.

30

MS DE WIT: But in the wider South Taranaki Bight, in the wider environment in terms of the cumulative impacts on that environment.

MR VENUS: The effects of trawling?

35

MS DE WIT: Mm'hm.

MR VENUS: No, we haven't got information on the effects of trawling throughout the South Taranaki Bight, no we don't.

40

MS DE WIT: Okay. Now if you could just turn forward again to page 23 of your evidence-in-chief. Now this 9.2, it refers to a request for further information about measures that might mitigate adverse cumulative effects and the response refers to provisions for stakeholder involvement coupled with oversight by the EPA having ample scope

45

for potential unforeseen cumulative effects to be identified and managed.

5 MR VENUS: This is page 24 of my evidence-in-chief?

[5.15 pm]

MS DE WIT: 23 sorry.

10 CHAIRPERSON: Which section are you referring to Ms de Wit?

MS DE WIT: It is the second - - -

15 CHAIRPERSON: 9.2, thank you very much.

MR VENUS: Yes, okay.

MS DE WIT: Now, when you refer to stakeholder involvement are you referring to the project consultative group?

20

MR VENUS: Well there is project consultative group and then there is the committee that is proposed.

25 MS DE WIT: Which committee sorry?

MR VENUS: We have got a committee, the iwi committee that is proposed in condition, the kaitiaki tanga committee as proposed in condition 36 which is the iwi involvement.

30 MS DE WIT: You would accept that stakeholder involvement if we look for example at the project consultative group involvement per se does not affect accumulative effects, you need some sort of management response?

35 MR VENUS: Absolutely, yes.

MS DE WIT: Just looking at the conditions that you put forward in your summary, conditions 23 to 27 related to the project consultative group that provides the consent holder to hold meetings with the group and minutes of that meeting, but the management responses to come out of that?

40

MR VENUS: No, there is also provision for the PECG to be involved in development of the monitoring plan in the EEP. In condition 80 the baseline environmental plan shall be prepared by the consent holder in consultation with the consultative group and the committee. The

45

intention is not just to have a series of meetings but to actively involve the representative of those groups in the process going forward.

5 MS DE WIT: If you become aware of accumulative impacts through the operative monitoring?

MR VENUS: Yes.

10 MS DE WIT: That would not be addressed through the baseline environmental management plan?

MR VENUS: It would be addressed through the operational monitoring plan.

15 MS DE WIT: That says what operational monitoring you do, not what your response might be?

20 MR VENUS: Well in relation to the environmental objectives if there were accumulative effects that were not consistent with those objectives that is how I would imagine that it would be addressed through the operational monitoring plan.

25 MS DE WIT: The environmental performance objectives through they relate to changes caused by this activity, not necessarily the changes caused by this activity in conjunction with another effect?

30 MR VENUS: No, they relate to environmental effects in a very broad range of environmental parameters. If there were accumulative effects in there they would occur in relation to the specific matters that the objectives were framed up in and that is why the objectives are framed the way they are so they are looking at a broad range of physical and biological environmental characteristics.

35 MS DE WIT: I turn now to the issue of caution. Now in your summary at paragraph 8 you refer there to the Rio declaration principle.

MR VENUS: Yes.

40 MS DE WIT: You are aware of course that the EEZ Act does not actually refer to the term the precautionary approach?

[5.20 pm]

45 MR VENUS: No, the reason I mentioned the precautionary approach was because it had been raised by a huge number of submitters and so I thought well that might be a good way of actually addressing the issue that had been raised by submitters.

MS DE WIT: You are aware therefore that when the Act talks about caution in section 61 it does not require serious or irreversible adverse effects?

5 MR VENUS: I am aware of that, yes.

MS DE WIT: It just requires where the information is uncertain or inadequate caution and environmental protection must be favoured?

10 MR VENUS: I agree. The reference in my summary of evidence was to the issue being linked by many submitters for the need to adopt a cautionary approach and that then automatically became a request to provide a blanket to decline the application and it was addressing that particular point.

15

MS DE WIT: I want to turn now to the issue of environmental conservation. Now, Dr Brown in her summary she referred to the South Taranaki Community Trust and said that that was more a general community funding source and not directly related to the key environmental effects, do you agree with that summary?

20

MR VENUS: The South Taranaki Community Trust is not related to ecological effects, it is not an offered ecological compensation approach, yes, I would agree with that statement.

25

MS DE WIT: In your summary at page 11 you have said that under the row 11 that you consider there are no residual effects warranting compensation, that is your opinion?

30 MR VENUS: That is what I said, yes, that is correct.

MS DE WIT: Now initially you identified the South Taranaki Community Trust as a vehicle for addressing ecological effects right?

35 MR VENUS: Yes, I think in the application document that was that reference that was incorrect.

MS DE WIT: So if we turn to your evidence-in-chief at page 44, so at the bottom there under paragraph 47.1 it refers to submissions referring to no mitigation being provided for ecological adverse effects not avoided to remedied and your response was that the South Taranaki Community Trust was proposed as a vehicle for addressing mitigation for ecological adverse effects that are currently identified but not avoided or remedied by the proposal.

45

MR VENUS: That is the wording there and I am saying that is an error. The trust is promoted as a vehicle and I am looking at community social issues not provided in the sense of addressing ecological effects.

5 MS DE WIT: In the application documents and in your evidence-in-chief you wrote that the trust was to address ecological effects?

CHAIRPERSON: He just said that was an error. I think he has answered that three times now.

10

MS DE WIT: Now in your summary again at .11 you refer to Dr Brown's summary and points A, B and C there, now in relation to item A you say that a key fact not recognised here is that recovery over the project area will occur within the lifetime of the project. The joint witness statement benthic organisms indicated that recover would be in the order of a decade?

15

MR VENUS: Yes, that is correct.

20 MS DE WIT: And so adverse effects are occurring over that time?

MR VENUS: That is correct, yes.

MS DE WIT: Those effects cannot be avoided or mitigated if the activity is to occur?

25

MR VENUS: That is correct, yes.

MS DE WIT: They are residual effects?

30

[5.25 pm]

MR VENUS: Yes, that's correct, but I think the point is whether or not ecological compensation is warranted in that, and my point is I don't believe it is warranted.

35

MS DE WIT: And Dr Brown differs on that point?

MR VENUS: That's correct.

40

MS DE WIT: Now in relation to item B, you say that avoidance measures and mitigation measures have been recommended in relation to a range of effects, but those measures would limit the likelihood of those effects or the extent of those effects but they wouldn't eliminate them, would they?

45

MR VENUS: In large part they will help to avoid the effects occurring in the first place, and they reduce the associated risk of an adverse effect.

5 MS DE WIT: So again your opinion is that there's no residual effects, it's just that they're not of an extent that you think compensation's warranted?

MR VENUS: In this particular connection I don't believe there are any residual effects.

10 MS DE WIT: So you just said that they will avoid them in some situations and reduce them in others. If they're reduced but not completely then there must be some residual effect?

15 MR VENUS: Well that's what avoid is, so avoid is – they will either be avoided, or if they do occur then the likelihood of them occurring is extremely low.

MS DE WIT: But if they do occur they're a residual effect.

20 CHAIRPERSON: I think we're starting to go over, again, the questions you've already asked him, and he answered.

25 MS DE WIT: Okay, I'll move on to point C then. Now you say here that from your perspective item C is not an effect, and I think there might have been some confusion in that. I don't think Dr Brown was suggesting that uncertainty was an effect but rather that uncertainty means that the effects that do occur may vary and therefore they may be greater or lesser. For example we're reliant on a model for predicting the sediment plume and what actually occurs may vary.

30 MR VENUS: Yes.

MS DE WIT: And therefore what actually occurs is an effect.

35 MR VENUS: Yes.

40 MS DE WIT: Yes. Thank you. Just moving on to the conditions, now you agreed in the witness statement that conditions shall be written such that compliance can be determined solely on the basis of the wording of the conditions, is that right?

MR VENUS: Yes.

45 MS DE WIT: Now, were you here when Dr Huber gave evidence?

MR VENUS: Yes.

MS DE WIT: Do you recall him saying – well he was asked a question about experts being able to achieve consensus when interpreting qualitative conditions, do you recall that?

5

MR VENUS: I just missed that, repeat please.

MS DE WIT: He was asked a question about experts being able to achieve consensus when interpreting qualitative conditions. In his response the reference to the transcript is page 629, his response was that “if it is just ranked as a low level effect then it would be very difficult to get a group of scientists to agree on what is low”. Do you recall that?

10

MR VENUS: No, I don’t recall that specifically, but yes, I accept that that’s what he said, yes.

15

MS DE WIT: Okay. And would you agree that a word such as “minor” is similar to the word “low”?

20

MR VENUS: No.

MS DE WIT: No, why not?

MR VENUS: No, I think the word “minor” or “less than minor, more than minor” are words that can be used to inform monitoring and can be used to inform environmental/scientific investigations.

25

MS DE WIT: So on the face of a condition how does minor or less than minor give more certainty to someone reading it on its face than low?

30

MR VENUS: Well low is just a comparative term, low can be lower than something that’s high. Low doesn’t mean anything on its own, if an effect is no more than minor then scientifically you can undertake an investigation to determine whether there is a statistically significant difference between the two things and that’s what would inform scientists when they go off and do their monitoring inset and evaluate results.

35

MS DE WIT: And statistically significant difference between what two things?

40

MR VENUS: If the test was that an effect would be no more than minor, between a beginning state and an end state, it’s a matter of going out and using enough statistics to be able to determine a difference between those two things that determine whether or not they were different.

45

MS DE WIT: But the extent of difference, there's no figure on what that extent of difference might be statistically.

[5.30 pm]

5

MR VENUS: Well as I said earlier, I think the term "no more than minor" is of value, is of much more value to a scientist in determining a monitoring programme than just saying "low" because low is just without any reference.

10

MS DE WIT: So your position is that a group of scientists wouldn't have difficulty reaching consensus on more than minor or moderate?

15

MR VENUS: Well I can't speak for a group of scientists, I don't think they can reach agreement on much, but I would say that in practice it's often done that evaluations are compared between two populations to determine whether or not there's a more than minor, a statistically significant difference between the two populations, so I think the answer to that is, I think scientists could actually reach that landing.

20

MS DE WIT: Okay. That's all thank you.

25

CHAIRPERSON: Thank you. Thank you, Ms De Wit. I'll see if there's any DMC questions and I'll come back to you, Mr Beatson. Any questions? I can start at the other end.

MS WRATT: Start at the other end, thank you.

30

CHAIRPERSON: Mr Kapea?

MR KAPEA: I have a number of questions. Kia ora, Mr Venus.

MR VENUS: Kia ora.

35

MR KAPEA: I'm not sure where I can start really. Look, I just want to go to 27 of your evidence.

MR VENUS: Of which one, sorry?

40

MR KAPEA: Well the evidence that you've presented today, paragraph 27, and you state here that the attached conditions have been prepared in light of evidence of joint witness statements were evaluated after completion of the agreed conditions.

45

5 Now, in terms of that, I want to go back then to paragraph 25 where you state that other than – it's down the bottom, third line from the bottom, other than some limited bathymetric changes, and it's something that I'm struggling with because you've made a claim in three of your conditions that there are minor variations in bathymetry and operational area following deposition, allowing for estimated one metre variations in deposition into pre-mined areas, and for residual pits and mounds at peripheries of the operation, and you go on.

10 And I'd like to go to Dr Terry Hume's chief-of-evidence, and that's tab 20 on page 650, paragraph 39. He states the key findings of phase one and phase two relating to coastal stability, and it is in relation to the proposed mining, it involves dredging large depressions in the seabed concentrating on aboard vessels and then returning to the seabed and so on.

15 But the point that I making here, he talks about one metre deep tailings, but he also talks about residual nine metre tall pits and 10 metre deep lanes. And earlier on in the first week when we had evidence given I raised the question about re-deposition back into the pits, because in his evidence he claimed 90 percent would go back into those pits. But it was established that the ship was 330 metres long, the deposition pipe was at the front of the ship and a mine crawler was at the stern of the ship, some 330 metres away. So the first 300 cut, the deposition hall, the depositing of that sediment is going to be onto the seafloor not back into the pit for the whole of that pit, that 300 block.

MR VENUS: Yes.

30 MR KAPEA: That's a huge area, and I can't seem to get my head around what that looks like, how tall it is. I realise that is going to be a mound and it will be shallower at one end and at the other end, but when he makes reference to nine metre and 10 metre high tips and nine metre and 10 metre ditches or pits that's quite significant in terms of, when you compare it to one metre average.

[5.35 pm]

MR VENUS: Yes.

40 MR KAPEA: Can you please – look, I'm struggling with that because the whole of - - -

CHAIRPERSON: Ask him the question?

45

MR KAPEA: Okay, I want you to explain to me how you end up with just a one metre high mound, or a five metre high mound, as was put to us yesterday by Ms Gibbs.

5 MR VENUS: Yes, that's a very good question, and I know there's need for clarification on that. The first issue is that the work that Dr Hume and Dr Green did was looking at a theoretical effect – and Dr Gorman, they're looking at a theoretical effect of a series of pits and mounds that were developed out in project area, what effect that would have on
10 wave climate. For that they adopted values of nine metre high mounds and 10 metre deep pits as a worse case situation for their modelling. And their modelling then proceeded and we heard the results from Dr Gorman.

15 In reality the height of those pits and the depths of those residual mounds will be nowhere near the nine and 10 metres, they were modelled for worse case purposes.

20 If I can just ask counsel, did Matt Brown ever table the drawings of the pits and mounds?

CHAIRPERSON: I was just going to say, one of the questions we asked in those things was to get a longitude and latitude picture, and I just wonder where we might be in terms of that, because I think that would
25 probably help all of us, and certainly Mr Kapea, because I think the difficulty is not being able to visualise it, and I think as Mr Kapea said, we've had lots of different figures about what it might be.

MR BEATSON: We have had a diagrammatic representation of the mining
30 pits or mining lanes and pits and mounds at each end of those with heights anticipated, and we have been meaning to hand it up at some suitable time. But Ms Garvan said she doesn't think it's here, so it doesn't look like this is going to be the suitable time.

35 MR CHRISTENSEN: Okay, I can recall, and whether it is was Mr Kapea or whether it was me, asking Mr Matt Brown in evidence, and he said that the – I can't recall exactly, but it was five or six metres maximum not 10 metres in terms of the mounds.

40 MR BEATSON: Yes, that's correct.

MR CHRISTENSEN: But the point remains, it's very confusing.

MS WRATT: On paragraph 32 of your evidence where you've got the table, in reference 3, which is actually on the next page, it says variation bathymetry – “minor variation of bathymetry in operational area requiring reposition allows for variation of one metre”.

5

MR VENUS: Yes.

MS WRATT: I think that's very different from five or six or 10.

10 MR VENUS: No, I think on that there's a punctuation error. There is a one metre variation in the deposition, the mining and deposition, because the intention is, apart from – and we'll come back to your point in a minute, but in the mining areas they'll be deposited back into the pre-excavated areas of tailings. And I think Dr Hume's evidence talked
15 about a residual one metre depression that was refilling the hole.

MS WRATT: Okay.

20 MR KAPEA: At the ends of the lanes there will be a residual pit, because as Mr Kapea has pointed out, there won't be a hole to put the stuff into, and at the other end of the lane they'll be a hole because we're mining out the other end to fill it up. So there will be a mound at one end of a lane and a pit at the other end, and it's the height of that residual pit and mound that I'm referring to here. Now the modelling looked at it as
25 nine metres and 10 metres, the reality is that the figures are likely to be more like five metres and four metres. But we have got a drawing somewhere which clarifies that and explains it, and I'll organise to get that.

30 MS WRATT: Okay.

MR KAPEA: I'm just looking at it from digging a ditch, you know, sort of 10 metres wide and starting shallow and then going down to maybe a depth of 10 metres deep. Well when you take that material out it's got
35 to sit somewhere, especially in that first cut, and that's the picture we're trying to get in terms of that area that's outside of the mined area and what's left.

40 MR VENUS: That's right. We have got a drawing, and I apologise on behalf of everyone.

MR BEATSON: Sir, we'll bring a picture, that's fine.

45 MR VENUS: We'll bring that, yes.

[5.40 pm]

MR KAPEA: So that's okay. I'll move on.

5 MS WRATT: Just before you move on, Mr Kapea. That's still not consistent with saying there is one metre variation and deposition into pre-mined areas and for residual pits and mounds.

10 MR VENUS: Correct, and there should be a semi-colon after "pre-mined areas". So one metre variation into the pre-mined areas - - -

MR WRATT: Yes.

15 MR VENUS: - - - and providing for residual pits and mounds at periphery.

MR WRATT: Okay. So that needs to be rewritten.

MR VENUS: Yes.

20 MR WRATT: Okay, thank you.

CHAIRPERSON: Mr Kapea?

25 MR KAPEA: The other thing that I'm a little confused about is condition 9, and you talk about grade control and your explanation on lens mud, is that "TTR's intention to mine these lens now".

30 MR VENUS: What is proposed in the conditions is that the grade control drilling will be undertaken prior to mining. The information from that will be reviewed in terms of grade for the resource, but also in terms of fine content or mud content. If the encounter in the normal course of operations with no – if they don't encounter a mud lens that's fine, business as usual. If they encounter a mud lens they will have to go back to identify that they can proceed through that area without causing
35 problems in respect of the environmental objectives, which is in other words in terms of creating fines.

40 So it introduces a step where TTR, if they can up with a methodology to mine through it they will, but it's got to be subject to meeting the limits that we talked about earlier in terms of the total finds and ultimately in terms of the suspended solid levels.

45 MR KAPEA: You also mentioned that you've sat with all the caucusing, with all the experts - - -

MR VENUS: Yes.

MR KAPEA: - - - and I think you mentioned, I think it was 14 of them or something like that.

5 MR VENUS: Yes.

MR KAPEA: Do you think that iwi in terms of being involved in that expert conferencing, do you think that was a component that might have been missing?

10

MR VENUS: In terms of identifying the – yes, the difficulty was in terms of experts and they were all introduced by the parties involved, so that was the pool of experts that went in there. It may have benefitted from having experts in terms with iwi background, yes.

15

MR KAPEA: I'm just pre-empting – we go to a marae in a couple of weeks' time and also it brings me to another question in terms of your conditions regarding consultation, and also you make a reference to going back to speak to Ngati Ruanui, and there's been an observation that consultation hasn't been that great. Would you be happy for this to be tabled, these conditions at the marae?

20

MR VENUS: Absolutely, and in fact as part of the ongoing consultation, not this same set but a very similar set of conditions have been tabled with Ngati Ruanui, and we've engaged in a process of trying to work through conditions with them in parallel with this.

25

MR KAPEA: All right, that will do me, thank you.

30 CHAIRPERSON: Mr Christensen?

MR CHRISTENSEN: Thank you. Can I start, Mr Venus, with just a general question and it arises out of the joint witness statement? Were you surprised, given where you and your planning colleagues got to in the joint witness statement, were you surprised at that lack of quantitative information that came out of the other conferences to inform the table that you had proposed?

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MR VENUS: Yes, I was. I was anticipating in that joint witness statement that we'd be able to come up with some quantitative units. But actually, I guess, having sat through all the other witness statements, the realisation that whilst the experts could make a conclusion about a level of likely effect, to actually there was a need to collect specific seasonal baseline information if you like, to actually come up with a quantitative number. That's the point, it's to get a quantitative handle on that natural variability.

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MR CHRISTENSEN: And that means that the position that we're in now is less than ideal?

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[5.45 pm]

MR VENUS: I think in terms of your situation, firstly in terms of the objectives I think you can do that because that's setting the objective in terms of the values that you are perceiving for the environment, in terms of setting the numerical numbers, I think that if you are setting those specific objectives you are at a slight disadvantage in respect of handing off the definition of the quantitative triggers to another party, but I think and that is really what comes back to the importance of that technical peer review group and the involvement of the EPA and the other parties in developing those quantitative triggers.

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15

MR CHRISTENSEN: Yes, and you would understand that there's a legal question in there about how far this committee can go in effectively delegating or even aggregating responsibility for setting those numbers to some other entity?

20

MR VENUS: Yes, I agree and I think it is appropriate for the committee to set the quantitative objectives but actually setting the actual numbers is a technical matter to be based on monitoring in the submissions I have got here.

25

MR CHRISTENSEN: So in your drafting of the adaptive management process who sets the numbers ultimately?

MR VENUS: Ultimately it is developed by and passed through the technical peer review group. Now it then goes to the EPA for approval in terms of to ensure they have a role of approving to make sure that those numbers are consistent with the objectives.

MR CHRISTENSEN: If I can ask you a few specific questions? The pre-operational baseline environmental monitoring programme, if I look at condition 79 in your current draft, you refer here to a minimum period of two years, do I take it that you are adopting the approach that says the baseline monitoring needs to take as long as it needs to take in order to gather sufficient information so that if for example the range of natural variability is not able to understood over a 24 month period because we do not experience a typical winter let's say or something of that nature, you would expect that the expert panel would say we need to extend it for another six months or something of that nature?

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MR VENUS: No, I think what I am saying here is it should be for no less a period than two years. I am also leaving open the door for information from previous investigations to be used in developing that but not part of the two year programme of the baseline programme.

5

I am actually advocating a minimum of two years and there may be more. TTR may choose to do longer cos it is in their interest to extend that baseline as much as they can because that will measure the natural variability that they are looking for. I am saying here that it should be for a minimum of two years.

10

MR CHRISTENSEN: I have a question about the protocol for arriving at compensation for commercial fisheries losses and you have moved from an earlier draft where you had, that is one of the matters that would be worked up to now not and you told us that was on the basis that having considered the evidence of the fish and zooplankton experts you made the assessment that there really was not a category that was worthwhile pursuing in terms of compensation?

15

20 MR VENUS: That is right, that was my opinion, yes.

MR CHRISTENSEN: If you are right about that, what harm would it do to leave the ability for that protocol to be developed in the consent conditions just in case it turns out that there is some economic impact on the commercial fisheries people?

25

MR VENUS: It would not do any harm whatsoever.

MR CHRISTENSEN: I am just going to take a wee moment and I am going to save time by not asking you some questions. If I can go back to the discussion that you had with counsel for the Director General in relation to the increased energy situation, it seems that there are two differences that you are trying to suggest to us, one is that you say that in the TTR situation there is a lot more information to be had, available at the moment about the environmental effects or not of the proposal than was available Crest and are you saying that that offsets the fact that this committee does not have before it an environmental management plan to approve?

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[5.50 pm]

MR VENUS: Yes, I am. I think the distinguishing the two is if you look back and I will not go through the detail because I will never find it, but if you look at the objectives that are set down in the Crest one, they are talking about there shall be no change on this, that and the other. The reason those were set because they were blanket statements of the

45

operation was not going to affect ecology beyond 30 metres because of the characteristics of that particular project.

5 We were not in a position with Crest to have caucused expert witnesses who agreed in relation to fisheries for example in relation to the benthic effects and so on that the effects were, and they were able to put it in terms of unlikely or minor in that sense. There was not a detailed study on which to base the Crest project was not predicated on a whole lot of science in the end.

10 That was, I think there were merits seen in terms of how it was granted, but if you look at those two conditions precedent, the first one was stage 1A and that was the first three turbine unit could only proceed if the regional council was satisfied that effects were going to be no more than minor. Crest had been unable to demonstrate so that is why that was for the regional council's point of view that was the trigger.

20 In this case I think you are in a different position that you have had enough, there has been enough evidence presented to reasonably reach a conclusion that an objective of no more than minor effects at the traps or in the biogenic lead is a reasonable objective and I think that is the real distinguishing points between the two.

25 MR CHRISTENSEN: Another point of difference is that in the case of this proposal we are told that is not feasible for the applicant to stage it in the sense of having a go at just one pit for instance because of the nature of the project makes that unrealistic?

30 MR VENUS: Well that is correct.

35 MR CHRISTENSEN: Can you think of a way if we did not agree with the way that you have analysed it, in other words if we were troubled by the fact that we do not have the environmental management plan in front of us like the Environment Court had it in front of it when it considered Crest the second time around. Can you think of a way as a planner that we could still consider granting a consent?

40 MR VENUS: The way it come about in Crest was there was an interim decision then there was a year elapsed when there was no work done and there was a whole lot of talking in meetings to come back to the same point I believe we are at now when an environmental monitoring plan had been developed, but if you look at the actual quantitative objectives in there they are actually fairly broad brushed and not tailored to exactly what is going on.

45

5 The only difference is that that Crest environmental monitoring plan has got a whole lot of prescribed methodology and I think that is what was developed through a period of a year of talking to various parties, a methodology was developed, but they never actually advanced in terms of getting any more information, so I think in terms of this you could consider looking for more detail in terms of the methodology and so on but I do not think that would actually in terms of environmental effects would mean much.

10 I think the best approach is as I am suggesting, I think I am interpreting what Dr Hume was suggesting which is to set the objectives and then to run with the baseline programme which then sets those quantitative limits.

15 [5.55 pm]

MR CHRISTENSEN: Have you considered whether it would work for a formal review of the consent to be undertaken by the EPA once the baseline monitoring information was available?

20 MR VENUS: That is probably, there is a review provision included in the conditions and that could be, one of the problems with the process of the EEZ Act that a review triggers and it is effectively an entirely dealt with as a new application, but that is kind of an procedural issue, but in terms of the review, I mean there's already provision there for the EPA to review it every year.

30 MR CHRISTENSEN: It is not unusual though to have an expectation put into a consent that on a particular event there will be a review so you could have for instance, I have seen on other consents where after say 10 years of the consent, a particular report is required as to best practicable options and on receipt of that report the consent authority will undertake a review so that sort of thing is doable.

35 MR VENUS: Yes, as I say there are some procedural issues with reviews under the EEZ Act, but I am putting that to one side. That approach makes sense. In fact I have already got in here is the involvement of the EPA and the development of the triggers and so on so they are already part of the process so a review would be probably a reasonable approach. I mean it would be in terms of looking at the quantitative trigger values and assessing them against the objectives, something of that order.

45 MR CHRISTENSEN: Okay, thanks very much.

MRS WRATT: Yes, I would like to just continue to explore Mr Christensen's
some of those questions a little bit and I guess looking a bit at the Crest
information and that table five that we were provided with by DOC
which and my question is around you proposed that the use of
5 objectives around not more than minor or moderate whatever, effect are
reasonable objectives set.

Now you talked about the joint witnessing of the scientists and the
work that is being done today and the fact that the scientists have been
10 able to identify and say that they do not think that a particular effect
will be significant or be more than minor or whatever. Would it not be
possible to actually take that further and rather than just say there
should not be more than a minor effect on the traps for example, on the
benthic environment on the traps to actually tease out with those
15 experts what does that mean in terms of the biota of the traps.

Rather than just saying not more than minor it might actually say there
should not be a loss of the kelp of there should not be some of those
sorts of things so that you are actually, in my mind those are qualitative
20 things but they are taking it further than just saying minor. The
scientists have said they think the impact is not more than minor.
What do they actually mean, get them to define what that means so that
there is some more substance behind those qualitative measures.

25 MR VENUS: Yes, I think therein lies a problem because if you say you will
not cause loss of kelp, loss of eucrone then how do you define that, and
it really comes back to you need to develop some sort of quantitative
measure of what that really means.

30 MRS WRATT: Yes, sure.

MR VENUS: that is the exact process I am trying to - - -

MRS WRATT: Yes, but at least you know what the quantitative measures are
35 trying to measure.

MR VENUS: Yes.

MRS WRATT: Have you had any attempt at doing any of that, post that expert
40 witnessing?

MR VENUS: I have, I have actually been going around to talk to the, the
oceanography people are just, you go and measure everything but you
need to get that baseline info to actually look at the variability, so there
45 was the Terry Hume discussion. The ecologists, you have got to have a
handle on what the natural variability out there is.

5 My own view is that we are better off, as I have included in here, is focusing on the physical parameters so we look at changes in light attenuation, photosynthetic or radiation. You look at chlorophyll a, you look at suspended sediments which is again all in here and those are the easy to measure physical parameters.

10 When you start getting into the ecological side of it you get all sorts of variability. You get seasonal and annual, you get event driven variability so it is very hard to actually have a monitoring programme around effects on ecology and so the focus I believe anyway the focus which I have tried to put in here is on those physical issues, physical parameters.

15 I understand what you are saying but it is pretty hard to actually pin down a quantitative measure in respect of any of these ecological things.

[6.00 pm]

20 MRS WRATT: The table 5 in the Crest decision has things like no change in benthic attributed habitat attributed to the project at a distance of greater than 30 metres from any turbine. There is something about no, all citations in particularly Maui's dolphins, the project not to address the effect of any individual. You must have had the same issues, how do you define whether or not something is attributable to the project?

30 MR VENUS: Yes, and so on that one if you look at how that translates through here and to the, where is the table at the back, I think is table 9 I think, sorry table 10. These are the evaluation criteria. It had been through the Environment Court but even in the Environment Court they are pretty generic conditions that were set.

35 They were not detailed quantitative conditions so even at table 10, no change in benthic habitat attributable to the project greater than 30 metres from the turbine and the change was plus or minus 0.05, in other words a 95 percent probability level of effect. That is effectively, there are very few that have numbers like that, but that was one that was in this case a quantitative statement of that change.

40 I am expecting out of this project that we will come out with some much more meaningful quantitative values that can be measured.

45 MRS WRATT: You are saying you do not think that would be helped at this stage by trying to give some more specific qualitative measures that those quantitative targets should be like that?

MR VENUS: No, I think the guidance would come from the environmental objectives and then in terms of the benthic sampling, then there is a list of issues here that need to be addressed, that should be addressed for the benthic sampling. That is condition 79A in the conditions.

In that particular case because the benthic sampling witnesses came up with a list of specifics so that gives the guidance if you like in terms of how those objectives are addressed or should be address and I think out of that will come a set of quantitative triggers.

MRS WRATT: Does an element of that achieved in the benthic area but not in some of the other areas?

MR VENUS: No, and there is an element of that in marine mammals but the marine mammals are addressed in a different management approach but yes certainly because the benthic people came up with a set of, they weren't treated than any of the other groups.

I think the zooplankton and fisheries people came up with some specifics in theirs as well which I have got incorporated in that list that is in my evidence, but I have not taken it across into here.

MRS WRATT: What I am hearing you say is you reckon you have got as far as you can with that sort of approach?

MR VENUS: Yes, I think and if you look at it in terms of the plume we are looking at the characteristics of the plume. We are looking at the particle size distribution and mass flux of the discharge. We are promoting a receiving water measurement of a concentration at various distances and gradient sampling and so on. I think there is enough prescription in here to actually come up with some meaningful quantitative - - -

MRS WRATT: I am certainly not saying you should not be doing that, I guess I am saying in addition to that it would be good to have some more specific qualitative measures.

MR VENUS: Yes.

MRS WRATT: You are saying yes?

[6.05 pm]

MR VENUS: I'm saying it would be good.

MS WRATT: It would be.

MR VENUS: But it's a matter of developing them, and I think, it's a process
5 that we've developed, and I think in some areas it's happened in the
baseline benthic – I'm sorry, in the benthic sampling we have – in some
of the other areas it has been approached too.

MS WRATT: I guess I just say, the more you can do that the easier it makes
10 our decision.

MR VENUS: Yes, okay.

MS WRATT: Or the more information we have our decision – so I've got one
15 more thing I will just like to explore a little bit – appreciate it, it is
getting a bit late.

CHAIRPERSON: No, keep going.

MS WRATT: It's in relation to "ecological compensation", I mean I hear
20 you're saying that you don't think there are any significant residual
effects that you need to be compensated for, but it seems to me that
there is still – TTR is wanting to go out, off the Taranaki coast and
extract the iron out of the iron sands and so on and make a profit off it.
Okay, New Zealand it get some benefit from that, from royalties,
25 though that royalty tax benefit doesn't go back to the local community.

Have you given any consideration, not so much in terms of the
mechanism but, to the potential to actually look at things that you could
30 offer to a Taranaki community, in terms of environmental projects, you
know like it might be and I'm not suggesting there should be, just to
give an example it might be a reseeded of clams or it might be doing
some restoration work on estuaries that might – where you might have
whitebait or eels or – and I guess particularly that you, you know, when
we're going to the marae in Hawera to - the extent to which you've
35 given consideration to any of those sort of opportunities?

MR VENUS: Yes, I've given – we've given quite considerable approach - - -

CHAIRPERSON: Again, I think you need to – and this is this "we" argument
40 again.

MR VENUS: Sorry.

CHAIRPERSON: I think it's got to be from your professional planning
45 perspective.

MR VENUS: Yes, sorry. Yes, I have been engaged in discussions with the applicant on that matter and discussions are continuing with, hopefully with a view to coming up with something along the lines of what you're referring to.

5

MR BEATSON: Could I just follow up on that point, because that has been something that TTR has been listening to and thinking about, and we really want to listen to what is said in Taranaki about what's important and what opportunities there might be before we be too pre-emptive about what it is that we offer, but it is something that we recognise that there is potential to give something back and we, you know, we've heard that comment.

10

CHAIRPERSON: Okay, so that's left on the table.

15

MR VENUS: Yes.

CHAIRPERSON: Thank you.

20

MS WRATT: Okay, thank you.

CHAIRPERSON: Right.

MR VENUS: Right, thanks.

25

MR ROGERS: Good evening, Mr Venus.

MR VENUS: Good evening.

30

MR ROGERS: I'll try and be quick, I've got seven questions, I hope they don't turn into 21, but first of all "good practice", do you believe that public reporting and an obligation to disclose to the public is a good a practice, in terms of meeting conditions of consent?

35

MR VENUS: Yes I do, yes.

MR ROGERS: Okay, thank you.

40

In your 8F "trigger values for review", are you suggesting that the consent holder should be able to review those values?

45

MR VENUS: In that condition I'm suggesting there should be a process whereby the trigger values are reviewed and, it maybe the suggestion that Mr Christensen came up with that maybe a mechanism for that – it wouldn't be just a review by TTR, obviously it'll be reviewed by your stakeholders and I mean subject to approval by the EPA.

MR ROGERS: So the answers no?

5 MR VENUS: The answers – am I suggesting it, yes I am suggesting that there's a mechanism for a review.

MR ROGERS: Sorry, my question was, do you see that enabling the consent holder to change the values of the trigger - to be able to change the trigger values, and I should have probably said "by itself"?

10

MR VENUS: No, not by itself, no.

MR ROGERS: No, okay.

15 There's quite a lot of linkages through these documents and so – and it does keep changing, so just in relation to bathymetry, in this group of conditions as it stands now, do you include a requirement to review – sorry, to measure, review and publish and disclose the bathymetry of the project area on a routine basis?

20

[6.10 pm]

MR VENUS: Yes there is – I would – simple answer to your question is "not explicitly", but there is provision in here in relation to the commercial fishing or fish and fisheries management plan for providing information on changes in bathymetry – it's condition 69A, protocol (ph 0.30), "Communicating with local community, commercial fishing industry, (INDISTINCT 0.36) keep fishers informed on a regularly updated basis of exclusion zones, vessel movements, bathymetry and other mining activities". So the intention is for that information to be out there.

25

30

MR ROGERS: Provided you're a fisher or a recreational fisher?

35 MR VENUS: Well it may well be preferable to broadcast it more widely.

MR ROGERS: Okay, thank you.

40 In the table at number 16 I think it is, on phytoplankton - - -

CHAIRPERSON: This in evidence?

MR ROGERS: This is in your summary statement of evidence for today and it's the – what is that – it's the table that's at the end of your evidence prior to your signature and it's part 16 on phytoplankton.

45

MR VENUS: Yes.

MR ROGERS: In here that you recommend a condition that there “be no
5 more than minor impact on STB phytoplankton, abundance and
distribution attributable to optical property changes arising from TTR’s
operations”.

Would it not be better to say “attributable to changes arising from
10 TTR’s operation”, and the reason I ask that is because there are other
effects than just **(INDISTINCT 2.04)**?

MR VENUS: Yes I agree that that – what I was trying to do was actually,
15 focus on the optical properties effects, but there may be other, so yes
I’m – that would be a valid approach.

MR ROGERS: So what you’re saying is you’d suggest putting another
20 additional one such as just sediment loading/heavy metals, those sorts
of other types of potential effects that may impact on phytoplankton?

MR VENUS: Yes, yes, you give consideration to it, I think the heavy metals
25 is – as an issue, is not – you know, that’s covered.

In terms of phytoplankton it’s particularly the optical properties that
affects phytoplankton that’s, you know, inhibits their photosynthesis,
25 so if you got sediment loading in the water it’s a consequence, optical
properties are a consequence of that sediment loading. But I take your
point it’s just - - -

MR ROGERS: No, it’s just we also had evidence that abrasiveness is also a
30 marine ecology issue for effects – probably not in the same order as the
optical properties.

MR VENUS: No, that’s right.

MR ROGERS: Okay, I said I’ll be quick.

In the same table, 18, in reference to the technical peer review group,
do you think it would be more prudent that they’re appointed by EPA -
35 important – sorry, appointed and engaged by EPA?

MR VENUS: Yes, I think – I think it’s important that it’s – it’s actually –
40 TTR’s - it’s the peer review were to look at TTR’s consents, and the
appointment onto that panel is approved by the EPA, so – and I think
that’s what I’m saying in here - - -

MR ROGERS: Okay.

MR VENUS: - - - that's the wording I've got, but that's semantics maybe but I think the – the procedure I've got here is more reflective of the other peer review panels I've been involved with.

5

MR ROGERS: All right, okay. I suppose the reason I ask that is because it would appear to be more independent I suppose than – than you looked at the same there.

10

The next question is – actually there's two here – the 100 million dollar insurance value, what was that based on?

MR VENUS: That was an arbitrary value that was determined in consultation with the finance manager at TTR I suspect.

15

MR ROGERS: Okay.

MR VENUS: And I just – that's in addition to the insurances that Dr Patrick was talking about this morning.

20

[6.15 pm]

MR ROGERS: Right, which is the marine pollution stuff, okay.

25

MR VENUS: Yes, marine pollution, yes.

MR ROGERS: And I suppose the evidence that we've heard is that, Marine at the moment is about 270 million and still not finished, it maybe that higher levels of (INDISTINCT 0.23) would be appropriate given that experience.

30

MR VENUS: Yes, but I think the insurances that Dr Patrick was talking about may have a bearing on that as well because some of those numbers are pretty high in relation to tankers and so on.

35

MR ROGERS: In terms of oil spills?

MR VENUS: In terms of oil spills.

40

MR ROGERS: Yes.

MR VENUS: Yes.

MR ROGERS: But this is general third party liability - - -

45

MR VENUS: Third party probably liability.

MR ROGERS: - - - that you're talking about here, yes, okay.

MR VENUS: Yes.

5

MR ROGERS: Thank you. And then finally, just – the numbers that you put forward as sediment loading numbers, if you end up using those you'll end with like a 40 percent higher discharge than what you've actually applied for because of the uptime, how are you going to deal with that?

10

MR VENUS: Sorry, which numbers are you referring to?

MR ROGERS: The sort of the 7300 tons per hour type thing - - -

15 MR VENUS: Yes, that - - -

MR ROGERS: - - - that is – that assumes – sorry, that number comes from the 8,000 plus the safety margin, but on top of that was normally applied a 71 percent uptime, so if you put a three month average at that and you had a fantastic year that was really flat and calm – I don't think you'll have much chance at that – but if you would have had that, then you would discharge 40 percent more than what's been discussed so far.

20

MR VENUS: But still expressed on a tons per hour basis.

25

MR ROGERS: But my point is, if you take that through in a good uptime year, you will discharge a significant amount more than, than what the modelling has sort of assumed.

30 MR VENUS: That's - - -

MR ROGERS: But that's my understanding, is that - - -

MR VENUS: That's correct.

35

MR ROGERS: - - - is that correct?

MR VENUS: Yes I think that's correct, because the modelling assumed a 71 percent uptime I think, so yes that would be correct – but on the – but just bearing in mind, that the hourly rate, you know, would be within what was modelled, so - - -

40

MR ROGERS: So maybe - - -

45 MR VENUS: - - - so, that there is - - -

MR ROGERS: But you have daily or an hourly rate - - -

MR VENUS: Yes.

5 MR ROGERS: - - - which is a maximum and then you have on top of that an annual discharge or something like that, which puts you in line with the application I suppose is what I'm - - -

10 MR VENUS: Yes, they have – I mean there is a physical limit on the amount of material it can process, and I think that's around the 8,000 tons per hour of seabed extracted so, we're talking about an average take of 8,000 tons an hour. But you're right, if they work through an entire year, it would be more mass processed through the ship.

15 MR ROGERS: Okay, thank you.

CHAIRPERSON: I've only got two quick questions because I think they've all pretty much been asked, but a bit of a related theme.

20 If we accepted the objectives the way they've been written and I note a number of parties think that they're quite subjective and therefore subject to interpretation, therefore, we need to put it – if we were going to go with that we'll need a very robust system so that when they came to set the trigger values and put aside whether it's a formal review, it go
25 to the technical review panel and, and I just wanted to go back to the point that Mr Rogers raised because the way that that condition 47, “the consent holder shall obtain the written confirmation of the EPA”.

30 So it says that, “That TTR will appoint the members but then seek confirmation from the EPA ...” and you said that might be semantics, so there may be some suggestion from other parties that, “Yes, TTR have put them up and the EPA simply confirms them”, is there a difficulty, in your view, that the EPA should select those people in consultation with, to provide a more robust process?

35 MR VENUS: No, personally no, I think – because the intention of that is, it's intended to be an independent peer review panel. I guess the concern is, that the selection of the parties is entirely by one or the other, by – certainly not by TTR and the EPA, and there needs to be process of
40 consultation in there to derive the right people.

CHAIRPERSON: Okay, no that's clear, thank you, that's your view.

45 The other one, and it goes to the EPA needing to approve and I think you use the word “approve those trigger values” and I just want – and the Crest situation, when it goes back to the North and Regional

Council I assumed, who, who is it within that organisation that approves it?

5 MR VENUS: It was the Chief Executive Officer of the council, as an individual, yes.

CHAIRPERSON: And presumably that person delegates it to some – to a technical person - it's not a political decision I'm assuming?

10 MR VENUS: No no, well see, as Chief Executive Officer - - -

CHAIRPERSON: Yes.

15 MR VENUS: - - - I'm not even sure if it was or as delegate, but it would be – it's a nominated individual, so I think in this context and I've already been told by counsel that I should have changed it, but - - -

CHAIRPERSON: Right.

20 **[6.20 pm]**

MR VENUS: - - - where I refer to EPA, I should actually be referring to the Chief Executive Officer of the EPA and those references should be the same.

25 CHAIRPERSON: Okay, thank you. It's clear to me, thank you very much.

Anything else? Mr Beatson, anything – follow up from you?

30 MR BEATSON: No not from me – I mean, we'll – obviously I'll run back and that is to think about and we'll be coming back with an updated set of conditions and addressing a lot of matters in our reply.

35 CHAIRPERSON: Thank you very much, thank you, Mr Venus, that was a bit of along session, but – I predicted it would be so thank you for that.

MR VENUS: Thank you.

40 CHAIRPERSON: Just a couple of things, Mr Beatson, just in terms of the questions that we posed, are you – have you got an ETA, I mean we didn't give you a time when you might come back with them, I'm not sure you're going to filter them back through particular statements or whether you're going to deal with them on one go or what?

45 I'm happy if we deal with it tomorrow, if you want to come back, I just want to make sure we don't lose it.

MR BEATSON: What we're looking to do, is make them available in the week, the Taranaki week - - -

5 CHAIRPERSON: All of them?

MR BEATSON: All of those matters, and we'll – we were intending to collate the responses so we can put together a bundle, and we were aiming for early in that week – I don't know if - - -

10

CHAIRPERSON: That's fine, all I want to know is that, the other parties may need to comment on those in any closing or something, so long as we've had some time, okay, that's fine, thank you.

15

Just the other issue, the witness that we lost this morning, Mr Schouten, I think we're – are we having – we're bringing him back tomorrow – yes, and we should have him at 9 o'clock, was that the understanding?

MR BEATSON: That's our understanding.

20

CHAIRPERSON: Right, because we've got - - -

MR BEATSON: But I haven't been in touch with him to confirm that – I don't know whether - - -

25

CHAIRPERSON: Has anybody – have we – has - - -

MR RYAN: Last thing he was going to be in the morning.

30 CHAIRPERSON: At 9 o'clock?

MR RYAN: Whenever he wakes up.

MR BEATSON: So his morning should be now.

35

MR.....: Yes.

CHAIRPERSON: Right.

40 MR BEATSON: So that should work, what do we - proceed with then - - -

CHAIRPERSON: Yes.

MR BEATSON: - - - that intention and with our fingers crossed.

45

CHAIRPERSON: So we'll proceed with that intention, and so on that part we'll commence tomorrow at 9 o'clock and then we'll have the other submitters following that, so 9 o'clock.

5 Nothing else? Thank you every - - -

MR McCABE: Sorry, sir, I just have one housekeeping thing, just in relation to Leigh Torres, just wonder if committee has made a final - - -

10 CHAIRPERSON: We haven't.

MR McCABE: - - - decision on whether - - -

CHAIRPERSON: We haven't.

15

MR McCABE: You haven't.

CHAIRPERSON: We haven't yet.

20 MR McCABE: Okay.

CHAIRPERSON: We will.

MR McCABE: Yes.

25

MR BEATSON: Actually – sorry.

CHAIRPERSON: Right.

30 MR BEATSON: I've got another housekeeping matter as well – you may or may not be aware of the memo that's come in from EDS, raising concerns raising concerns about process matters.

CHAIRPERSON: Vaguely.

35

MR BEATSON: We'll think about that overnight, but our view is, that we should probably front foot that issue and if there is something that they want to put forward and they feel they've been unfairly denied, we should give them the opportunity to put it forward, but we'll discuss that with you further tomorrow and see if you – think about a proposition and see if you'll agree.

40

But really, we don't want to leave a residual risk, of a process challenge on a matter like this.

45

CHAIRPERSON: So on that, I haven't seen a memo, I was informed that one had come in and that EDS would be resuming their position or reserving right. We haven't yet put up the comments, the statement that I read out up on the website.

5

Are you suggesting we should hold off doing that until - - -

MR BEATSON: Potentially one way to resolve their issue would be that, that they say they had some submissions that were ready to be presented to us then to present those, and if others have a comment on those perhaps a short opportunity for that to happen and then for you to take into account whatever they have to say in your written determination, that's a potential way to resolve the issue now.

10

15 CHAIRPERSON: Ms de Wit - - -

MR BEATSON: I don't think there's much in it, but - - -

CHAIRPERSON: Ms de Wit, I know it was probably Ms Holm which has filed it, I'm not sure whose filed it, I haven't seen it, but it's EDS, have you got a comment?

20

MS DE WIT: Yes, Ms Holm has filed the memo – I mean we would be open to that solution, Ms Holm is based in Wellington so she could potentially come – I'm not sure you're in Wellington the rest of this week or - - -

25

CHAIRPERSON: I mean, if we were to, I mean because tomorrow we have submitters up till about lunchtime, if we have time so if we wanted to, we could do that tomorrow afternoon.

30

You going to discuss that with EDS or do you want us just to do that and Ms de Wit what's your view?

MS DE WIT: I mean that's probably the best way to address. I'll have to contact Ms Holm to make sure that she's available tomorrow, but I can confirm that.

35

[6.25 pm]

40

CHAIRPERSON: Okay, well let's check with the rest of the panel.

DISCUSSION

I think if we were then, it would simply be – I mean I did say to Ms Holm that we'd heard from her then didn't let her say anymore, and I suspect that's what's caused the issue.

5 MR BEATSON: Sir, the memo indicates if they've got some written material they could present, and that might be a way through it, if they just present that material.

CHAIRPERSON: You mean just table it?

10

MR BEATSON: Yes, and you take it into account to the extent you want to.

CHAIRPERSON: Okay, all right, I'm happy with that. Ms de Wit are you happy with that?

15

MS DE WIT: I'm sure we could do that.

CHAIRPERSON: Thank you very much.

20 MR CHRISTENSEN: I suppose on the basis then if, obviously considering that material and if that changes our view about the decision we indicated on the procedural matter, whenever that was, yesterday morning, then we'll make that clear to the parties.

25 MS DE WIT: Perhaps if we get that to you by the end of tomorrow, is that – I mean it's already prepared so we just have to put it into a written format as opposed to scribbled notes.

CHAIRPERSON: Yes.

30

MR BEATSON: And if you were minded to potentially change your view, presumably you will seek further comment from the other parties.

CHAIRPERSON: If we were – either that you just wouldn't turn up.

35

DISCUSSION

I was being unnecessarily flippant, of course we would, yes.

40 MR BEATSON: I have been so clearly to that myself during the course of the proceeding.

CHAIRPERSON: So Ms de Wit, if you could file that by end of tomorrow, I think you were suggesting.

45

MS DE WIT: Yes.

CHAIRPERSON: And we will consider that. If our position is any different
then we certainly need to come back to the parties for comment. We
will hold off putting onto the website our view, because our view will
5 be dependent on what we hear from the EDS.

MS DE WIT: Thank you.

CHAIRPERSON: So thank you for that. Thank you very much. So thank you
10 everyone. We will adjourn till 9 o'clock tomorrow morning.

**MATTER ADJOURNED AT 6.27 PM UNTIL
WEDNESDAY, 16 APRIL 2014**