TRANSCRIPT OF PROCEEDINGS

ENVIRONMENTAL PROTECTION AUTHORITY HEARING

Trans-Tasman Resources Limited
Marine Consent Application

HEARING at
LEVEL 4 MEMBERS LOUNGE,
THE WESTPAC STADIUM FUNCTION CENTRE,
105 WATERLOO QUAY,
PIPITEA,
WELLINGTON
on 17 March 2017

DECISION-MAKING COMMITTEE:
Mr Alick Shaw (Chairperson)
Mr Kevin Thompson (EPA Board Representative)
Ms Sharon McGarry (Committee Member)
Mr Gerry Te Kapa Coates (Committee Member)

Hearing Proceedings

Day 01 Thursday 17 March 2017

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[9.01 am]

MR SHAW: Good morning, ladies and gentlemen. I had intended to open this morning to respond on some procedural issues that have been raised by way of memoranda, and one in particular from the fisheries submitters. I'm not going to do that because they're not here, and that matter will be addressed when they are.

I should just say to everybody that we understand absolutely, and probably more acutely than anybody, the difficulties that an uncertain timeframe imposes, because we of course have got to accommodate that ourselves, as to our officials, but I'll comment in detail on the issues raised by the fisheries submitters when they are with us.

In the meantime, I also need to apologise for yesterday, a little confusion around what was happening in the area of conditions and submissions around adaptive management. I hadn't had the schedule for today in front of me at that stage, and so I was a little uncertain as to what was going on, and I had not anticipated when I responded that counsel for both Greenpeace, KASM and the Royal Forest and Bird Society would be making their presentation, or their submissions, on adaptive management today. I thought that everybody was going to be doing it on Monday.

But that's fine, it's all good, and so we will be hearing the conditions and we will be hearing the initial submissions from those parties today.

Is Mr Currie going to be joining, Ms Haazen?

MS HAAZEN: Yes, he is landing just as we speak, so he should be here by 10.00 am.

MR SHAW: That'll be just fine. So, there we are and, again, as I say, apologies for that uncertainty and confusion, but it's pretty clear that we want to hear from all parties in respect of adaptive management, and my understanding is that some people simply couldn't appear on Monday and so that's why it's being done today.

Ms Haazen, did you want to say something?

MS HAAZEN: I think I'll leave it to Mr Currie. We were not quite clear if we were presenting, and what on, today, so he might have to speak to whether --

MR SHAW: Well, I tell you what. It would be not regarded as a tragedy by people here on this side of the table if we lost a session this afternoon because people were not able to proceed, it would be no hardship to us, because we are going to be pressed for time, and I'm sure that there are other parties than members of the DMC who are already booked on flights and

really do have to -- we do have to finish in time for those to be caught. Okay? But if you could just keep in touch, Ms Haazen, with the staff in terms of your assessment as to where things are going.

MS HAAZEN: That would be at the end of the day after Helen Anderson.

MR SHAW: That's right, yes.

MS HAAZEN: Okay.

MR SHAW: Thank you all very much. We will return to some of these procedural matters as the day goes by, should the fisheries submitters and their counsel make an appearance. If they don't, we'll deal with it anyway.

All right, we'll begin then this morning with MPI, Mr Halley, and Mr Anderson. Mr Anderson from Crown Law, Mr Halley from MPI presumably.

Look, just before I ask you to begin, perhaps I should just very briefly set out the process that we're using in respect of the role of counsel during this hearing.

No cross-examination is permitted. All questions are through the DMC and through the Chair particularly. So, after you're finished, Mr Halley, there will be questions from the DMC followed by questions from other parties, those questions being directed to us in writing in the first instance. They will be, except in the most extraordinary circumstances, just read as is. They're not our questions, they are those of the parties questioning it, and the only point in that process where counsel are involved directly is in re-examination issues at the end of the exercise of their own witnesses.

Are you okay with that, Mr Anderson?

MR N ANDERSON: Yes, sir, absolutely.

MR SHAW: All right. Mr Halley, I wonder if you could introduce yourself and we'll begin on the response, or up to you.

[9.05 am]

MR N ANDERSON: Yes, sir. I have just some brief introductory remarks.

MR SHAW: Well, that's why I asked you, but there we go. That's all fine.

MR N ANDERSON: Yes, sir. Thank you. So, good morning, Mr Chair and members of the Committee. As mentioned, my name's Nicholai Anderson. I'm Crown

counsel from the Crown Law Office, and I appear today to introduce Mr Steve Halley from the Ministry for Primary Industries, and also after that, Dr Peter Longdill, the consultant to the Department of Conservation.

By way of brief background, the EPA, as you will know, has requested information from both MPI and DOC under section 44 of the Act. The Ministry for Primary Industries received two requests, 26 January this year and 10 February this year. In the requests the Committee asked a number of questions about fishery management area 8, including the impacts on quota owners if the applicant's mining area was excluded, dominant species, typical fishing methods used and catch data held by MPI. MPI replied to both requests by letter dated 22 February 2017, and at the Committee's request, Mr Halley, the manager of inshore fisheries at the Ministry, attended expert caucusing in the field of ethics of fishing. His attendance is recorded in the joint statement produced from that caucusing dated 14 February.

The Committee has also requested Mr Halley's attendance today, we understand to address questions relating to the Ministry's role in fisheries management and the data it uses, and as well as any questions arising from the Ministry's reply to the section 44 request.

So, without further ado, I'll hand over to Mr Halley.

MR SHAW: Okay, Mr Halley, and we'll start with the section 44 request and your response to that.

MR HALLEY: Sure. Do you have any particular questions, sir?

MR SHAW: No. If you begin by outlining the response I think is important.

MR HALLEY: Okay. So, as Nicholai mentioned, we received a request from the EPA for some information, two different requests. We provided the information on catch from the area likely to be affected by the proposal, and also the wider quota management area. We've also outlined some background to how the QMS operates, which we thought would be useful for the Committee to consider. I'm happy to go through in a bit more detail the response if you think that would be useful.

MR SHAW: I do.

MR HALLEY: Okay. Do you have the response in front of you?

MR SHAW: Yes.

MR HALLEY: You do?

MR SHAW: Yes, indeed.

MR HALLEY: Okay, so, look, what I'll do is just read through each of the questions in a kind of summary form, if you like, and then if you have any questions that arise from that, obviously happy to answer those.

[9.10 am]

So, the first question that we had was advice on the impacts on quota holders of taking the 66 kilometres squared area out of FMA 8 in terms of -- the question was ability to secure quota. We thought that the question didn't necessarily reflect the impact that the proposal would have on fishers, and so we provided a little bit of an explanation around how the quota management system works, and the difference between quota and the annual catch entitlement, which is the ability for fishers to harvest fish on an annual basis, and is the thing that is likely to be most directly affected by this proposal.

Would you like an explanation of that from me, or are you satisfied that you've got a feeling for that?

MR SHAW: I think we've traversed that territory pretty thoroughly.

MR HALLEY: Excellent. Good. Okay. So, we then talk a little bit about the proposed mining area at 65.8 kilometre squared as a very small proportion of the total management area. It's about 0.123 of a per cent. The top ten species are almost all inshore species caught by smaller inshore vessels that usually operate within 12 nautical miles, although the species can still be caught in the wider exclusive economic zone.

The total reported estimated catch in the area is also a relatively small amount of the total catch in FMA 8, which is outlined in table 1 of our reply to the questions. I won't talk in detail about that information. It's self-explanatory, but happy to answer any questions if you have any.

MR SHAW: Move on. I think we'll probably deal with questions at the end of your --

MR HALLEY: At the end. Okay, so the next question that we were asked was advice on the dominant species allocated in quota. Again, this is a question about the difference between quota and ACE and also complicated by the fact that the management areas by species differ, so our reply talks a little bit about the fact that, although hoki has the largest TACC that encompasses area 8, in actual fact the hoki fishery has one quota management area throughout New Zealand, so just because the TACC for hoki is very high at 150,000 tonnes, there's only a very small proportion of that that's actually taken from FMA 8 as a whole, so we've

kind of rephrased that question a little bit in table 3 where we talk about the top ten QMS species taken in FMA 8 by volume, and you can see that jack mackerel is the highest of those, barracuda, frostfish, school shark, etc.

In terms of the next question, we were asked if there's likely a reduction in catchable quota from the restrictions on fishing and what additional fishing effort, if any, would be required, and we've been … Our answer here is that the impact of removal of the area will vary by operator. At a QMA level the impacts themselves, as we've mentioned, given the quantities involved and the size of the area, at the QMA level the whole of FMA8, which is some 53,000 kilometres squared, the impact will be very small. At the individual quota owner/ACE fisher level though, the impacts are likely to vary, and we haven't analysed those.

The impact essentially would result from fishing ever having to shift from one area to another, and that that may have implications for the species that are caught, the requirement for fishers to cover that new catch area with annual catch entitlement that they may not already own, and we can't estimate accurately that impact, and it would vary by individual.

The next question that we were asked to answer was advice on the typical fishing methods used. Tables 4 and 5 of our response outline the different methods used in the area and the proportions of use. Bottom trawlers by far the biggest, followed by set net midwater trawl bottom longline, and the catch per volume by method is outlined in table 5.

[9.15 am]

Midwater trawl is very high. That is because within that FMA there are some large offshore fishing vessels that target jack mackerel by this method and take large quantities of jack mackerel, and that influences the proportion of catch, but in general terms bottom trawl for the inshore fleet is a very significant method in this area.

MR SHAW: I am going to interrupt there just so we understand clearly. By inshore, you're talking about within the CMA or …?

MR HALLEY: Essentially within 12 nautical miles. It's complicated.

MR SHAW: So, within the CMA.

MR HALLEY: That's right. Yes.

MR SHAW: That's cool.

MR HALLEY: Okay, the next question was what quota are in place for FMA 8, including the names of quota holders and fish species. There's a spreadsheet that's been provided that outlines the answer to that question, and it's self-explanatory. The most recent catch data held by MPI for FMA 8 is outlined in table 6.

Comment on likely displacement of fish by the activity proposed by TTRL was the next question, and we have responded to that as much as we were able in question 3. We haven't drawn any overall conclusions.

We then were asked to provide a map or plot of the trawl fishing paths or footprints of fishers in South Taranaki Bight.

MR SHAW: Could I just again ask you to pause there?

MR HALLEY: Yes.

MR SHAW: When you say you prefer not to draw conclusions, because they'd be unsafe?

MR HALLEY: No, I just don't think that we have, in this case, produced an overall response about impact. We're leaving it to the Committee to decide based on the information that we've provided. We've been clear, as much as we're able with the information that we have, to outline what we think the impacts will be, and we've noted that there will be varying impacts on individuals, resulting from the need to shift where they're fishing, rather than impacts on the quota management area as a whole, which is a much broader area, and an area (overspeaking)

MR SHAW: The reason for my question was just simply whether or not it indicated that any conclusions drawn would be unsafe statistically or whatever, and you're saying no, that's not the reason.

MR HALLEY: That's not necessarily the reason. There is uncertainty in the information at the sort of scale that we're dealing with here. Most of our information is reported at the QMA level, so that much broader management area level. We have data at finer scales than that, but the finer scale you go, the more uncertain it becomes, but that doesn't necessarily mean that you would rule it out entirely. It's information that's provided and legally required to be provided, so it obviously carries some weight.

An assessment of the likely impact on the ability of fishers to continue to take the annual catch limit. Again, we've provided the information that we have on the likely impact. There will be some requirement for individual fishers to adjust their fishing operations, but overall we're not anticipating that this proposal would prevent the annual catch entitlement being taken from the quota management area as a whole.

And then reports on the effects of bottom trawling. We've provided some material there, and a brief description of quota, TACC and ACE and their differences, we've provided some information there, and I understand that you've traversed that area in some detail.

We've also, in relation to figure 1, which is the attachment to our submission, we've outlined catch intensity by area, and essentially the high intensity catch is indicated by the darker, sort of orangey brown colour. The lighter shades of green through blue indicate less intense. The area affected by the proposal is that small light blue circle that you can see just below the Taranaki Bight there. That indicates that there are some areas of fishing intensity in the vicinity of the proposal, but also outside of it.

I'm happy to answer questions on that.

[9.20 am]

MR SHAW: Thank you. Ms McGarry?

MS McGARRY: I don't have any questions per se on the section 44. I just had a couple of general ones. Well, I've got one about what you said about the impact on individual ACE holders being variable. It's been suggested to us by Dr Robertson that the level of that impact would be no different to natural perturbations basically, and a lot to do with, I think he said the mismatch between catch species mix and their quota of ACE. I just wondered whether you'd like to comment on that, and I know you've been careful not to say the significance of it, but is it in the realm of that, is Dr Robertson correct?

MR HALLEY: In general terms, when fishers fish in the same area, over time they become very knowledgeable about the type of fish species that they catch, and they will generally cover their catch as much as they're able with annual catch entitlement; it's in their best interests to, it's not an obligation. But when they fish in new areas and they're not so familiar with the mix of species that you take there, there is a possibility that they will take species that they don't have ACE for, and they'll be required to purchase that.

The question is why they shift, and in this case the reason for them shifting is because there is activity preventing them from fishing the area that they have historically.

There is no doubt that across a quota management area, the mix of species and the quantity of individual species will vary. It's just a question of what drives you to shift.

MS McGARRY: So, what you've said about being unfamiliar with an area, you could end up with a higher mismatch than you'd normally get is what you're saying?

MR HALLEY: It depends on how far you have to shift, and it depends on the catch mix that each individual has, but that is a possibility, yes.

MS McGARRY: One of the other things that Dr Robertson raised was in terms of assisting with any parties who may be disadvantaged to hold quota in FM 7 and not in FM 8. He suggested that MPI, if it wished to assist, could help with the situation by simply passing a regulation that could make it possible to legally target some of the species for which FM 7 and 8 boundary is an administrative barrier, to deal with this disadvantage, and we've asked for reaction from the fisheries submitters as to that, and I mean there's a question of whether we can even put any weight on that at all, but even if we could, what would your view be there on that?

MR HALLEY: So, we haven't had an opportunity, MPI hasn't had an opportunity, to specifically consider that proposal. I saw it in the comment. My immediate reaction is that those boundaries are legal boundaries, they are there for a reason. I appreciate people's comment about them being administrative, but they provide the basis on which the quota management system operates and which our catch limits operate. There are very specific requirements in legislation for altering those boundaries and, off the top of my head, I can't see a particular reason why this situation would be different from any other. There are processes to follow in this case, and in a situation where alteration might be considered, and I can't see any reason why we'd step outside of those.

MS McGARRY: Are you aware of any situation where that kind of action has been taken to address any disadvantage?

MR HALLEY: So, there's an ability under the Act for the Minister to make a decision around a sustainability reason for joining QMAs together, and he did so most recently with the South Island eel fishery where he brought together long-fin and short-fin eels that were previously managed separately into combined management areas. There's also the ability for the industry themselves if they get above, I think, 70 per cent support of the quota holders in each area, to make changes to that boundary or propose changes to the Minister around that boundary.

[9.25 am]

I mean, those remain possibilities. Have we done it to manage an impact in a management area? No, because the quota management area itself is, as I mentioned, 55,000-odd square kilometres, and the area of impact's

less than a per cent of that. So, there are a lot of bigger issues at stake than the small area, and it's not quite as simple as Dr Robertson might suggest.

MS McGARRY: Yes, no in terms of us being able to give any weight to an alternative like that, in your view, would be …?

MR HALLEY: So, as I mentioned, and MPI doesn't have a formal position on it, I've provided you some "off the cuff" advice. If we were asked formally, we'd go away and think about it. Whether that advice would differ from what I've talked about here, I don't know.

MS McGARRY: My question's really that it seems to me we have to rely on the current administrative boundary, that's what you're saying to me?

MR HALLEY: I think that that's a reasonable assumption to make.

MS McGARRY: Anything else would be crystal ball gazing, wouldn't it?

MR HALLEY: Indeed.

MS McGARRY: Thank you.

MR SHAW: Dr Thompson?

MR THOMPSON: No questions at this stage thanks.

MR SHAW: Mr Coates?

MR COATES: Kia ora, good morning. I just wanted to clarify what you were talking about about the hoki, which is shown in FMA 8, but you're saying they don't catch it in FMA 8?

MR HALLEY: No, they catch it -- so, the quota management areas for species differ depending on their biological range and some administrative factors. In the case of hoki, the prime area where it's caught is in the Cook Strait area and east and west of that area, so there is a single quota management area around the country, simply because it isn't taken in a lot of quantity elsewhere, so no reason to have ten different quota management areas. A single one is sufficient to ensure sustainability of a species and to manage it correctly.

But when you ask for the amount of tonnage by quota management areas that cover FMA 8 that encompasses hoki 1 which is, as I mentioned 150,000-odd tonnes of which less than a very, very small percentage is taken in FMA 8, and primarily as a bycatch.

MR COATES: And does the same thing apply also to jack mackerel, which is primarily on the boundary?

MR HALLEY: Jack mackerel is more spread throughout the country. There are ten quota management areas for jack mackerel, and quite a significant jack mackerel fishery in jack mackerel 7, between 7 and 8, that is utilised by some very large trawl vessels that use that midwater method that I was mentioning before, and the quantities taken are quite significant in that area.

MR COATES: So, if you take the hoki, the squid and the jack mackerel out, and then look at the other remaining species, and then compare it with your map at the back of the letter, which showed catch intensity, and in the area we're talking about, the mining area, they're orange and yellow, so that's sort of on the high side, but it's actually the high side, but only really fishing for a very small proportion of the allowable catch.

MR HALLEY Correct.

MR COATES: But even so, you still say that the effect on the fishery of removing that area would not be significant, or whatever your words were?

MR HALLEY: So, we've provided some information about the significance. We haven't drawn particular conclusions, but it is reasonable to say that the TACC, so the ACE for the species that you've talked about, taking away squid and jack mackerel, etc, will likely be able to be taken, or still be taken, in the areas that remain unaffected by the proposal.

MR COATES: In the adjacent areas?

MR HALLEY: In the adjacent areas. The difference is the impact on the fishers from being required to shift from the area that they've traditionally fished in, to these new areas, and how significant that impact is, and that's where there's a degree of uncertainty and it will vary between individual fishers.

MR COATES: Thank you very much.

MR SHAW: You may or may not be able to help me, but in terms of people who are holding ACE, but don't hold quota, what is the nature of the relationship generally between those fishers and the quota holder? It's a contractual one obviously, one way or another. Is that contract reviewed annually on the basis of the development of the ACE?

[9.30 am]

MR HALLEY: It's variable. As you'll appreciate, the ACE can change each year. It is only an annual right, and so the nature of the contract can also change each year, and in some cases will, and in some cases it won't.

MR SHAW: Okay.

MR HALLEY: The contractual obligations vary between quota holder and ACE fisher.

MR SHAW: And, again, you may not be able to go into this, but in terms of the things that may influence a change in that, by definition, annual contract, what other things might impinge on that?

MR HALLEY: I could only speak in generalities, but not in detail.

MR SHAW: You couldn't speculate? Generalities are quite good and useful. They indicate possible lines of inquiry.

MR HALLEY: I mean, clearly it would be the availability of ACE, what areas were fished in, the particular methods that were harvesting, a range of factors.

MR SHAW: But the critical thing is not unlike other, for want of a better word, subcontractors in the economy as a whole, here, this is definitely supply driven as opposed to demand driven?

MR HALLEY: It can be, although there are species where there are limitations on the amount of ACE that can be harvested relative to the catch for sustainability reasons. Snapper 8 is a classic example where demand exceeds supply and the price of ACE is quite high.

MR SHAW: All right. But any fisher who is not a quota holder would be anticipating some variation?

MR HALLEY: You'd have to ask them. You would think in a business sense that that would be a useful thing to do because it is only an annual right, but a lot of these people … one of the things we try to do as government is to maintain some degree of consistency to allow people to plan their business operations. The idea of sharp fluctuations in availability from our side is something that we try to avoid as much as we can.

MR SHAW: So, how does the Ministry influence those things in terms of securing a reasonable basis for business planning?

MR HALLEY: So, we try to manage our fisheries in as transparent and consistent way as we can. In some cases that means that we have some rules in place that point to the circumstances in which the TACC, and therefore the amount of ACE available in a fishery, will change so that there isn't any surprise that when these circumstances occur an adjustment is made.

That isn't in place in a lot of fisheries, but it's something that we're working hard towards. Otherwise we obviously consult fishers in advance, in as much in advance as we're able to, on potential management changes that provides them an opportunity to adjust. We also, when there is very significant adjustment required, try to graduate that in. So, we don't make the adjustment all at once, we say, "We'll reduce the amount of ACE available by this amount each year over this time-period to allow you to adjust your business practices accordingly".

MR SHAW: So, when that happens, for whatever reasons, sustainability reasons or come what may, would the introduction of a new activity into a region, in this case FMA 8, would that lead to the Ministry beginning a process of consultation and consideration about the impact on these smaller fishers?

MR HALLEY: Well, so the level at which we operate our management controls, that is across the whole quota management area, so that's that I mentioned before, that 150,000 square kilometre area, and the adjustment, we would only begin discussion if the adjustment was sufficient to warrant a change to the total allowance commercial catch, and therefore the amount of ACE that was generated from that across the fishery.

MR SHAW: Because your interest there is the …?

MR HALLEY: The wider quota management area.

MR SHAW: The wider quota?

MR HALLEY: Yes.

MR SHAW: But if it became clear that this was a major issue for individual fishers you wouldn't be intervening?

MR HALLEY: No. We operate more at the macro level than the micro level.

MR SHAW Because, and I don't want to put words in your mouth, because there would be no impact of that on the total allowance annual catch?

[9.35 am]

MR HALLEY: Our assessment is that the total allowable commercial catch won't change as a result of this proposal, given the modelling work that's been done around the plume and various other things, and the fact that it's a very small proportion of the wider quota management area.

MR SHAW: Okay.

MR HALLEY: But, again, that doesn't mean that there's not impacts on individual fishers.

MR SHAW: Oh, no, no, indeed not. I'm just trying to understand the architecture, if you like, of the Ministry's role here.

MR HALLEY: So, at the Ministry level we operate at the macro at the quota management area. Our primary job is to ensure sustainability of our stocks and provide for utilisation at that broad level, and that's the way that we manage.

MR SHAW: Okay. One last question from me. When we're talking about fishing methods, quite obviously these have different impacts, how does the Ministry make decisions in respect of limiting or regulating the use of a particular method in a particular area, and what would trigger an intervention of that sort?

MR HALLEY: In a general sense we, through the quota management system, limit catch rather than method. If the method has an associated impact on the wider environment, and a topical one in this area is set nets and Māui's dolphin, then we will act to manage the impacts of the particular method on the environment and, in the case of set nets in this general area, we've closed particular areas to set net activity, and also put monitoring on board set net vessels to manage the issue.

MR SHAW: Okay, because if we look at your appendix 1, areas closed to fishing within the study area, there's a lot of detail around that, not all of which apply in this area, but you've got bans on finfish take, bans on trawling, bans on pair trawling, bans on vessels above 13.5 metres and so on and so forth.

MR HALLEY: Yes.

MR SHAW: So, there's a multitude of interventions employed by the Ministry to achieve what?

MR HALLEY: Yes. So, I've mentioned the environmental impact one and set nets, and that's the clearest, and the one I'm most familiar with.

MR SHAW: Yes.

MR HALLEY: There's also a trawl ban in the portion of the coast up there which also relates to closing areas that are of most importance to Māui's dolphins, so their kind of core range, if you like.

MR SHAW: So, that's a conservation issue?

MR HALLEY: Yes.

MR SHAW: All right.

MR HALLEY: But some of the pair trawling closures up there may well have been allocative, designed to manage conflict between sectors.

MR SHAW: Like, for example?

MR HALLEY: Between the recreational and the commercial sector.

MR SHAW: Okay.

MR HALLEY: There is ongoing conflict when large bulk fishing methods operate in areas of peak recreational fishing activity, and sometimes we look to intervene in that space. Not so much recently, but historically we were all over there. A lot of this --

MR SHAW: So, just bear with me, and the named vessels only, that's to protect a presumed property interest, but it can't be simply a property interest, surely?

MR HALLEY: I'm not familiar with that restriction. I was going to mention that a number of these area closures have been in place for a long, long time, and came in well before the quota management system, and I'm not 100 per cent sure about the named vessel one. I know that we have a requirement for observers to go on board set net vessels in the New Plymouth/Taranaki area, and we need to identify obviously who those vessels are but, off the top of my head, unfortunately I can't provide you detail of that named vessel one.

MR SHAW: And of course I just want to clear to anybody listening, that not all of these interventions in any sense apply to the area that we're talking about. I'm just interested as to the triggers, if you like, for that sort of intervention, and what you're saying is that those triggers were mostly pulled quite some time ago, apart from when you are intervening for a sustainability purpose?

MR HALLEY: So, following introduction of the quota management system in 1986, we've become a lot more disciplined about our regulatory interventions and the rationale for them, because we operate a cap and trade system of fisheries management, so you cap the catch and the allow the right to be traded within it. The more regulatory intervention you have, the more interference there is with that, but at times it's very necessary because the quota management system and this cap and trade doesn't apply to all sectors, and also doesn't internalise the cost of fishing around environment impacts.

[9.40 am]

MR SHAW: Now, this is the last question. Trawl methods and bottom trawling, I think it'd be fair to say I'm no expert, but certainly a lot of people say this causes a great deal of damage to precisely one of the areas that concerns this application as well, the benthic communities are affected by bottom trawl. If that effect was deemed by the Ministry at some point in the future to have such an impact on the fishery, the Ministry might intervene in order to, again, go to these questions of banning certain methods, because you've talked about an agnosticism around the method of catch for the most part?

MR HALLEY: No. So, what I've talked about is a general intent to manage the impact on species that are harvested by controls on catch, but acknowledging that some of the methods used have an impact on the wider environment that we need to consider, and regulatory intervention to do that is well within our power, and we've acted to do that in relation to set net fishing, for example, and in some areas outside of the inshore in relation to bottom trawl.

So, where's there's sensitive habitat types, where there is rationale to support the need for intervention at a method-based level around environmental impacts, then we have the power to do that, and some of these areas -- or there are areas that are closed to inshore trawling which relate to sensitive habitat types.

MR SHAW: And the clashes you were talking about between customary food gathering, recreational fishing and a commercial effort?

MR HALLEY: There's whole plethora of reasons for some of the pre-QMS closures, yes.

MR SHAW: All right. Which remain valid presumably?

MR HALLEY: The closures are in place, and over time we would look to make sure that all of the regulatory interventions we have are consistent and that people understand why they're there, but that's quite a considerable process.

MR SHAW: Okay. Solomon. That's the case of the wisdom of, I suspect, in some cases, who's getting which half. Okay, thank you, I've got no more questions. I'll just see whether other parties do. Oh, sorry, yes, Mr Coates?

MR COATES: I just wanted to ask a little bit more about, I know you've got a regulatory role, but do you have any role to ensure that quota is efficiently used?

What I'm trying to get at is, particularly from a Māori viewpoint, a lot of Māori iwi own quota and have to lease it out because they don't have the ability to use the quota in ACE terms. Do you have any ability to facilitate the utilisation of ACE?

MR HALLEY: We operate as a regulatory agency at the macro level, so we create the framework where ACE can be traded, and we like to try and make sure that there is a good fluid market for ACE so that people can get it, and we don't operate at an individual sort of level like you're referring to, we tend to leave that to the businesses themselves to figure out the best ways to ensure efficiency of their operations.

MR COATES: When there are low-value species, do you try and ensure that the catch is maximised?

MR HALLEY: We certainly look at each individual species and area catch limit to make sure that the catch limits reflect the information that's available and ensure sustainability and provide for use as much as we're able.

MR COATES: Thank you.

MR SHAW: Any questions from other parties? No? Oh, Ms Haazen?

MS HAAZEN: No, sir. No.

MR SHAW: No. Okay. Anything from you, Mr Anderson?

[9.45 am]

MR N ANDERSON: I'm just wondering, sir, if it would be helpful to the Committee to receive any additional information about the named vessel restriction, if that was something you were interested in?

MR SHAW: It would. I think it would be of interest in terms of detail.

MR N ANDERSON: Is that something we can provide, Steve?

MR HALLEY: Yes.

MR SHAW: Okay. Thank you very much. So, where are we now with you, Mr Anderson?

MR N ANDERSON: Yes, sir. I believe now that Mr Halley is free to go --

MR SHAW: I think so.

MR N ANDERSON: -- we're now on to Dr Longdill.

MR SHAW: And we'll move straight to Dr Longdill?

MR N ANDERSON: I just have, again, some brief remarks from the Department's perspective. Thanks, Steve.

MR SHAW: Thank you very much, Mr Halley.

MR N ANDERSON: Just carrying on the initial introduction, with the Department of Conservation, the Committee requested information on 26 January and 10 February. The Department replied in writing to those requests on 8 February and 15 February specifically providing an updated set of information on intermittent boat and aerial surveys off the Taranaki coastline, PGS Australia Pty Limited's seismic survey in the Taranaki basin, joint witness statements relating to marine mammals, noise and other conditions from the 2013 TTR application, and information on the relationship between the Department and Conservation Boards.

The Committee specifically requested information about the advice the Department received from its consultant, Dr Longdill, on sediment modelling in the course of its pre-lodgement consideration of this application. As the Committee's been advised, there is no single report, or there was no single report, from Dr Longdill. Rather, Dr Longdill's advice was provided in correspondence over an iterative process over some months, including comments on draft reports and conditions.

At the Committee's request, Dr Longdill has now prepared a summary report, which was submitted only yesterday afternoon, so hopefully that is now before the Committee, which summarises his involvement, including the main issues that he raised with the Department.

The Committee's also requested Dr Longdill's attendance at the hearing today. The Department will provide the additional information requested regarding strandings and sighting database as soon as possible, and by Tuesday, 21st at the latest.

The Committee's 15 February letter also requested information from the Department to help the Committee understand the Department's conclusion in respect of its decision not to lodge a submission on this second application. The Department's internal report on that matter is before the Committee through Shawn Thompson's evidence for the applicant, and I'm sure that's been reviewed already.

As the Department has previously advised, that report sets out what the Department considers the full background to its decision whether or not to lodge a submission, including its history of involvement with the first application and the current one. As that report notes, the Department's

focus in respect of both applications has always been on the condition that it should apply in relation to those aspects of the proposal of specific interest to the Department if the Committee was inclined to approve the application.

In relation to the current proposal, pre-lodgement discussions with the applicant resulted in conditions that the Department was satisfied would be appropriate if the application was approved, and it was on that basis that the Department decided not to submit.

That's by way of background, and I am happy to address any of those points if needed, but otherwise we could proceed to Dr Longdill.

MR SHAW: I think the particular phrase used in the memorandum that went to the, I think it was deputy chief executive, from memory --

MR N ANDERSON: The conservation gains?

MR SHAW: Precisely, Mr Anderson.

MR N ANDERSON: Yes, sir.

MR SHAW: And I think we would like to understand what was meant by that expression, because it did imply a fairly thorough understanding of the overall impact of the application were it to be granted, and implied a broad assessment of it.

MR N ANDERSON: First off, I think the Department does acknowledge that the wording used was unfortunate, "conservation gains" in particular. The focus, again, was on the conditions, and the Department was satisfied, having reviewed, particularly the material from Dr Longdill, and the matters covered in the report, that if the conditions proposed by the applicant were imposed, those would be the appropriate conditions. That was always the Department's focus, and it reached the point where it considered that if those were imposed, they would be the right conditions.

[9.50 am]

The report otherwise does speak for itself in terms of matters considered. Obviously there is a broader frame involved, as you'll appreciate, from a summary report, is just that.

MR SHAW: I'm going to just stray very briefly from that to talk about what we can and cannot do in respect of conditions.

MR N ANDERSON: Yes, sir.

MR SHAW: Because I think it is material to this conversation, and I'm not going to invite a full submission. We've read what Crown Law, on behalf of MBIE, has had to say around the issue of adaptive management, but quite clearly that's a shadow that falls across this conversation about the appropriateness of the conditions proposed.

MR N ANDERSON: Yes, sir. And --

MR SHAW: Because if they can't be imposed …

MR N ANDERSON: Yes. In fact, MBIE is scheduled to speak on Monday. In fact, it will be me speaking on Monday to adaptive management specifically, and potentially conditions there. I do note that the conditions have, at least from the website, have changed fairly substantively, at least those proposed from what were originally considered, and particularly from what Dr Longdill considered and provided advice on.

MR SHAW: We were wondering whether Crown Law was actually going to appear for MBIE on that, so …

MR N ANDERSON: Yes, sir, that it is the intention. Obviously MBIE is the Crown Department that has submitted and it's through that submission that the Crown is a party, as all government departments are part of the one Crown. So, that is the intention, sir, to speak to that on Monday afternoon.

MR SHAW: On Monday, okay. All right, unless there's anything pressing from my colleagues, I think there's probably enough by way of preliminary, and we will move to hear Dr Longdill.

MR N ANDERSON: Just, as we were talking about conditions and the fact that they have changed, I would just signal at this point that, although Dr Longdill has endeavoured to have a look at the amended conditions, he's emphasised to us that the importance of conditions is as a package, and it's difficult for him in the time available to give any meaningful comment on the changes, but we would potentially offer up the opportunity if the Committee wished for it, for Dr Longdill to look at that package and provide further comment at a later date.

MR SHAW: Mr Anderson, the answer is yes, and a message possibly to people who are not in the room, is that we will take what time is necessary in order to get the information that we require as a Committee.

MR N ANDERSON: Yes, sir.

MR SHAW: We will of course seek permission from those we're required to seek permission for if we move outside the statutory guidelines in terms of timing, but otherwise we're going to take the time that we need, and that also applies obviously to the time that other parties and people and organisations such as yourself need to do it.

MR N ANDERSON: Yes, sir, and my instructions are to offer that to the Committee, Dr Longdill's ability to review those conditions and make further comment as soon as possible, but within a more reasonable timeframe for him to look at the package.

MR SHAW: I don't think we expected it at 9 o'clock this morning, Mr Anderson.

MR N ANDERSON: I wouldn't imagine, sir. Yes, sir. And very late him actually over where he is.

MR SHAW: Indeed. All right, so, how are we with Dr Longdill? All good? Good morning, Dr Longdill.

DR PETER LONGDILL: Hi there. Well, good evening my side, but good morning your side.

MR SHAW: I tell you what, we'll stick to our time. Dr Longdill, what we'd like you to do, and we have the summary report in front of us, we have just had a conversation with counsel around the issues that led to the Department of Conservation making a decision not to submit fully, and some of that of course was based on a - I'll use the shorthand - "report" from you.

[9.55 am]

What we'd like you to do is begin by introducing yourself, qualifying yourself in the way that you would normally do appearing as an expert witness, and then we'll move through to any comments that you may have to supplement the summary report, which is a rather substantial summary, but I see that a fair chunk of it when I reviewed it earlier are appendices that fall at the back of the report.

Over to you, Dr Longdill. Sorry, at the conclusion of your work, we'll take questions from the Committee, questions from other parties, and then Mr Anderson will have the opportunity to re-examine on your behalf. Those other questions will come through the Committee rather than being asked directly by counsel or other parties.

Mr Anderson, just before we go here, I want to understand in terms of, if questions are directed which sort of impinge, if you like, on the overall reasoning of the Department in respect of the approach that they have taken, I would appreciate your early advice as to whether or not those are

matters that Dr Longdill is in a position to answer. I would have thought not, but I don't want to put words in your mouth.

MR N ANDERSON: Sir, coming into this hearing, into this appearance, that certainly was something that was considered in terms of Dr Longdill's ability to speak to the decisions ultimately made by Department --

MR SHAW: Officials.

MR N ANDERSON: -- managers and officials, and Dr Longdill will, as I understand it, speak to his areas of expertise and the advice that he provided and why he did that, and matters as to why the Department made the decisions it did. Again, I refer to the summary report that has been provided, and we've mentioned the unfortunate use of language at the conclusion, but otherwise that does summarise the Department's position, and the Crown position would be that Dr Longdill is not able to speak to ultimately the internal DOC decision-making based on his advice, he can speak to his advice.

MR SHAW: So, we can't go behind that in respect of this witness?

MR N ANDERSON: With Dr Longdill --

MR SHAW: No.

MR N ANDERSON: -- it just would simply be outside the scope of --

MR SHAW: No, no, that's fine. This was more for the benefit of others in the room, Mr Anderson, because we do have to have ground rules as we go into this because it has been a matter of contention earlier in the hearing.

MR N ANDERSON: That would be the Crown submission, sir.

MR SHAW: Thank you. Okay, with that background, Dr Longdill, over to you to begin.

DR PETER LONGDILL: Okay, thank you. My full name is Peter Clifford Longdill. I have a Bachelor of Science in Marine and Environmental Geoscience from the University of Auckland, a Master of Science with Honours in Oceanography from the University of Waikato and a Doctorate of Philosophy in Oceanography also from the University of Waikato.

My areas of expertise include marine physical processes, along with their interaction with ecological processes and water quality. This includes field data collection programmes and environmental monitoring programmes, along with the development and application of numerical modelling tools to quantify those processes. I've applied those skills to

coastal and marine projects, including aquaculture, port dredging and reclamation projects, both within New Zealand and overseas. I have over 16 years of professional experience in the field of physical oceanography.

I'm currently employed by the Ministry of Transport and Communications within the state of Qatar, acting as the employer's representative for the management and oversight of all environmental matters associated with the contracting, regulatory compliance and independent supervision and monitoring of capital works development for a major government-owned greenfield port. Prior to this I held the position of senior project manager and senior environmental scientist for the consultancy, COWI A/S, a position which I held for over seven years. I've also worked as an environmental and marine consultant for ASR Limited and the University of Waikato.

I've participated in several recent major coastal marine applications before the New Zealand Environmental Protection Authority, including the New Zealand King Salmon Board of Inquiry, Trans-Tasman Resources during 2013 and 2014, and Chatham Rock Phosphate.

[10.00 am]

My work and research areas focus on identifying and quantifying the environmental impacts arising from coastal and marine development in aquaculture, along with the subsequent identification and implementation of appropriate mitigation and compensation measures. A key feature of my work is the application of both collected and remotely sensed data, together with appropriate modelling and monitoring tools to aid understanding and quantification of physical and ecological processes in coastal and marine waters.

For the past ten years a significant period of my time has been spent on mega dredging and reclamation projects. The largest of these has included dredge volumes of around 60 million cubic metres, which is equivalent to around 150 million tonnes, with land reclamation works utilising all of that dredged fill, as well as similarly sized dry works excavation materials.

These projects involve, among others, cutter suction and trailer suction dredger technologies, along with slurry transport via pipelines and open channels, fines separation and water discharge, material mixings, and processing reclamation and the associated environmental concerns. I've been involved in these projects from an environmental control and management perspective throughout the planning, design, permitting, and construction and operation phases. In my various roles, I've led the permitting of those projects, led the design of environmental

management systems for the oversight and then managed subsequent environmental monitoring programmes. That concludes my introduction to myself so back to you.

MR SHAW: All right. Shall we begin with you, Ms McGarry? I think you are going to have to give us some background. Ms McGarry has just said ... we only got the document last night and I myself had only the briefest ability to have a look see so I think you are going to have to go through before we move to questions of you.

DR PETER LONGDILL: That's fair. That's fine. So, I take it you would like me just to go over basically the process I went through, the summary I've got here.

MR SHAW: Absolutely, and indeed, I think, the summary of the decisions you made and the advice you gave at various stages. I know you have staged it for us very clearly.

DR PETER LONGDILL: Okay. I guess I'll start off by summarising that I was involved in the previous Trans-Tasman Resources Limited application for iron ore mining within the South Taranaki Bight, which was heard before the EPA in 2013 and 2014. During that time, I was engaged by DOC to provide advice and evidence in the areas of sediment plume, modelling management and monitoring. During that process, I reviewed relevant material which was put before the Decision-making Committee and participated in the expert conferencing for that process.

During mid-2015 I was approached by the Department of Conservation who advised me that TTR Limited was intending to reapply to the EPA and in advance of that application, I had been requested to review some of the documents that were relevant to my area of expertise and provide technical advice on those to the Department. The scope of that advice extended to the hydrodynamic and sediment plume modelling, the sediment plume generation and dispersal, and coastal oceanography.

There were several series of reports and information that were made available to me during that process with the Department. I've listed those in my memo, the first of which occurred on 11 December 2015 where I was provided with I guess what we could call the HR Wallingford laboratory tests and review of plume modelling, and the source terms for the sediment plume modelling, a revised NIWA sediment plume modelling report. I reviewed those and provided comment via a memo through to the Department.

[10.05 am]

I think rather than going through each and every package of information that was provided to me by the Department, I will refer you to the

timeline that's in my summary report and then just get on to the issues. To summarise some of the main issues which I raised during that process, if I start out first of all with the in-situ sediments in the proposed mining area.

I raised an issue relating to the number and distribution of those sediment samples and bore holes which were used to inform the modelling work. That was raised under item 1 of my 15 February memo which is attached to that report. In response to my query which was generally along the lines of how do the sediments that the applicant had taken and analysed, how do they represent the diverse sediment properties both horizontally and vertically throughout their proposed mine plan?

In response to my query, TTR provided some supplementary material regarding how they determined the run of mine particle size distribution. In that material, they confirmed that the data was sourced from 10 different locations within the mining area and provided some particle size distribution curves and tables along with that.

I reviewed that material that was provided to me by TTR and I came to the realisation that the bore holes that had been used to inform the run of mine particle size distribution had in fact been, the term I use is, truncated at different depth levels. To put that in other words, a sediment bore hole or a bore hole has been drilled down through the sediment right from the seabed down through different vertical layers of the sediment, and what had been done was one hole might have been used between the seabed and 5 metres below the seabed surface, and that data used to put into this table. On another bore hole, it might have been 0 - 11 metres, on another bore hole, 0 - 7 metres. So, it was quite different across each of these bore holes.

This, I had assumed, because the information wasn't provided to me, so I had assumed this was a result of the TTR's definition of which sediments they considered to be a minable resource. That gave me a few concerns or things to keep in mind, I guess, when suggesting conditions or limitations because if this process had been done, if there had been a definition of what we call a minable resource in the application stage to inform the plume model, then I suggested that a similar requirement should be taken through to the conditions.

But what is also necessary there is to make -- whoever may operate this mine, should a consent be granted, that they are required to obtain sufficient information in advance of any mining activity to actually define, to know what the sediment type is, to make sure it is consistent with what that definition was previously.

I'm at paragraph 20, roughly, in my report. Accordingly, I suggested that there be a requirement for conditions which could act to ensure any potential future mine operator was mandated to both obtain sediment information of sufficient density and quality in advance of mining. Further, I suggested that the conditions should ideally restrict the mining and also the exposure for the natural erosion processes of sediments with higher quantities and of fines than had been used to define that minable resources for the purpose of the assessment.

[10.10 am]

After a lengthy period of forward and back throughout 2015, I determined that the requirements of that draft condition 47, as they were submitted, addressed that issue for both the collection of sufficiently detailed information in advance of mining, I would refer you there, that would be the condition 47E specifically, also placing a limitation on the fines content, the ultra-fines content of that run of mine sediment.

Something to note about that 47E, particularly in regards to the density and quality of those bore holes that need to be -- the sediment sampling and bore holes which need to be taken in advance of the mining. There's a reference to the requirement of a measured resource as per this Australian code for reporting of exploration results. I reviewed that document and I formed the opinion that was a suitable document which gave sufficient flexibility to a mine operator to ensure that the sampling was reflective of the variability of the sediments you observe in the ground rather than putting a fixed limit on it which could be, say, a bore hole every 20 or 50 or 100 metres. This standard essentially allows that to be -- or forces that to be closer together where there's high variability in the sediments or further apart where there's less variability.

The other, let's say the next, issue I've got which is labelled as 1B in that summary report, determination of the run of mine PSD and its fines content used to inform the plume model. The fines content of that run of mine PSD used to inform the plume model was also raised. So, we're talking about the plume model now, not so much the variability of the sediment in-situ.

In particular, I raised a query regarding where that particle size distribution data originated from and how it represented the sediments in-situ. TTR provided additional information in their subsequent memos where they defined how that run of mine sampling was calculated, the run of mine PSD. That information simply -- I didn't really need to form anything from it but it provided useful to inform my comment in later consent conditions.

The sediments tested by HR Wallingford, how many they sampled, were they reflective of the on-board processing on the proposed mine vessel and also the variability in the run of mine PSD. The on-board processing, the grinding and resource separation, and that mining vessel of course, will change the particle size or the settling velocity of the sediments if you compare run of mine to what's discharged.

I raised the issue that the source of that post grind sample should be identified exactly where it came from and how that could be taken to represent any anticipated variability in the run of mine sediments. I received some additional information from TTR where they confirmed that those samples were really only for the purposes of the flocculation tests and not to verify the particle size distribution for the plume model, so they were really just using them for that flocculation settling velocity. They confirmed that the post grind sample that they tested was a post grind sample and it had been subjected to what they call the fine grind process using a bore mill.

[10.15 am]

I found that was appropriate, given that it did come from an actual trial process. It wasn't somehow sieved or simulated. Reviewing the supplementary material that was provided by TTR on that issue, I suggested that a limitation could be placed on the discharged sediment from any potential mining operation in terms of both its mass and particle size distribution. But I conditioned that that would be suitable if there was a concern from biologists or ecologists in relation to suspended sediment effects on mobile fauna. I mean there, fish or things that can move around. That would have been in addition to the fixed locations for suspended sediment compliance which were in schedule 2.

If there wasn't that concern, then I suggested that the plume could be otherwise managed in a receptor based framework which was already being proposed by the applicant in accordance with those draft conditions. But I did note that those schedule 2 locations should be informed by the ecologists and biologists in terms of where those sensitive receptors occur.

The next issue, number 2 flocculation dynamics. Due to the effect of the simulated flocculation dynamics in the sediment plume model, I raised that TTR could perform some tests, confirm that the on-board processing -- I asked if they could do some tests to confirm that the on-board process and the grinding and milling would not adversely affect the flocking potential of those discharge sediments. TTR of course confirmed that sample that was tested had already been subjected to a bore mill process so that issue was not really taken any further.

The differing interpretation of the flocking results by NIWA and HR Wallingford, I raised that under my very first memo and requested further justification. As a result, I received a memo from, I think it was NIWA was the author, and in there the differences between those two interpretations was summarised. NIWA came to the conclusion in that memo that they considered the average to be appropriate. I read through the memo, the details, and I was in agreement with their conclusion that given the differences, the average was the appropriate thing to use.

Another issue, the wave periods used within the near and mid-field models, which were then used to inform the source terms for the far-field sediment plume model. The wave periods utilised within that HR Wallingford model for the near and mid-field, the most energetic wave condition was a significant wave height of 3.5 metres with a peak period of 10 seconds. In my first memo, I raised to TTR that peak wave periods on the West Coast of New Zealand frequently exceed 10 seconds and I would note there that the longer wave periods have a much higher potential for the mobilisation resuspension and transport of sediments in deeper waters.

That issue wasn't directly responded to by TTR but I considered the usefulness of further follow-up on that issue in terms of other simplifications that were also made in those models; examples being unidirectional currents, and then some other factors which they added to the conservatism of that near and mid-field model such as the selected erosion rate constants, the bed sediment densities, along with the act that in the actual far-field sediment plume model a full time series of simulated wave heights and periods had been directly applied. As a result of all that, I formed an opinion not to follow up further on that issue.

[10.20 am]

Issue number 5 was the plume monitoring framework and the suspended sediment concentration compliance framework. In my very first memo to the Department which was passed on to TTR, I noted that I was unable to comment or review on the framework, the strategy, the approach of the feedback mechanisms because no information was made available and that was quite key to providing advice to the Department.

The response was basically that this would be addressed in the environmental management and monitoring plan, and in my second memo I actually started -- I suggested some amendments and additions to an early draft of the conditions framework document. The back and forth process then really started with TTR in terms of comment, suggested changes on those conditions, which dragged on for quite some time.

I don't think there's much value in going through the intricacies of that process other than the end result. At the end result we basically -- there was a set of conditions. I've listed them. I would consider them to include conditions 4, 5, 6, 14, 17, 18, 19, 20, 28, 54, 55, schedule 2 and schedule 3, which all work collectively to manage the plume and the suspended sediment compliance. Throughout that process, I had noted that the schedule 2 compliance locations should be informed by biologists and ecologists, and that a separate approach might be required in the case of concerns regarding mobile fauna.

That framework is what I would call a receptor based framework, so it's based on compliance of those sensitive receptors. The operational sediment plume model is a real key element to it. The rigor around it and the input terms for that sediment plume model which were mandated in the conditions were key to it.

I've got a bit more to say about schedule 2. I'll just see if this is the right place to do it. Yes. Schedule 2, the way that I saw schedule 2, although there were still a few pending, what I would consider, relatively minor things to do with the plume modelling. The way that framework of conditions worked with schedule 2 and the receptor based framework, I was quite satisfied to suggest to the Department that there was no need to further go into the details of that modelling work. The schedule 2 limits in co-operation with those other consent conditions essentially set at those locations a requirement that there be no input, no mining derived sediment impacting those sites.

That was my review and opinion of those schedule 2 limits and how those compliance limits would be achieved. So, given that they were the locations that people are interested in, that seemed reasonable. Given that we would have -- if a consent was issued during that process that operational plume model would be a far better tool for assessing the plume distribution than what we had before us at the time.

[10.25 am]

The next issue, I've called it Mine Management; the availability and rigour of advanced sediment information to inform mine management. Again, I noted that I was unable to really comment on that in my first memo because there was no information available. I received further information from TTR. TTR provided a description about what would be done but their description failed to contain any real definitive requirements or specifications or statements to provide any adequate level of certainty about what appropriate level of information in terms of quality and quantity would be collected in advance of the mining. I'm

particularly talking about the advanced sediment information here so it does relate to that first issue I talked about.

Accordingly, I suggested some conditions and amendments. I'll just flick through the page. Again, conditions went back and forth. The end result of that process I've got as being conditions 18, 19, 47, 52, 54 and 55 which largely relate to the limitation on the fines in the run of mine, the monitoring of the actual discharge because that's very important to inform the sediment plume model, the actual requirements around that sediment plume model, and how often it's calibrated, how often it's validated, how often it's subject to outside peer review. The height limit for the discharge as being four metres above the bed. I was satisfied that those conditions addressed that issue in terms of what I've called it there; the information to inform the management of the mine to make sure they're actually able to comply with the schedule 2 requirements.

I hope that's enough of that. I'm happy to move on to questions now.

MR SHAW: I'm going to ask you one question then we're going to break for coffee, Dr Longdill, and come back to you. I don't think we've got any choice. We've got some technical issues we need to sort out as well. My question to you is whether or not the conclusion you formed, which was advised to the Department's management, is still a conclusion that you would reach, hasn't changed?

DR PETER LONGDILL: Yes, given the set of conditions which I saw at that time.

MR SHAW: Same opinion. On that basis, I think we know where questioning leads us and of course the saving question matter there is of course the worst scenario modelling which you have not had a chance to review in any detail yet.

DR PETER LONGDILL: No.

MR SHAW: Okay. That being the case, we are going to break for coffee now. We'll be back in 15 minutes. Thank you.

ADJOURNED [10.29 am]

RESUMED [10.52 am]

MR SHAW: Can we have Dr Longdill back? Welcome back, Dr Longdill, and thank you. We will have questions for you, I'm sure. But before we do, I just want to say to all of us, myself included, that we can only address to Dr Longdill questions that relate to his evidence and his area of expertise. He's not in a position to speak for the Department of Conservation in respect of issues that we may otherwise have expected

them to talk about had they chosen to make a submission; it might have been mammals or whatever. Dr Longdill is in no position to comment about that. Mr Anderson said he is in no position to talk about that. We will just make the general point that people choose to participate as parties, as submitters, in a process such as that and we're not in a position to go behind those decisions in terms of the questions that we'll be asking.

I thought it was easiest to get that up front. I don't know if there's anyone who wishes to comment on that but that's going to be the approach that will be taken. On that basis, I'll turn to my colleagues. Sorry, Dr Longdill, I thought you should hear that because those things that are not part of your sphere of responsibility, the advice you gave the Department, and indeed the advice you are giving us today in this evidence, feel free to bat them away if they're not in that space. All right.

MS McGARRY: Thank you, Dr Longdill. Have you been able to see the source data, Dr Longdill?

DR PETER LONGDILL: What do you mean by source data?

[10.55 am]

MS McGARRY: Well, the data behind the particle distribution information that you've been given.

DR PETER LONGDILL: Yes.

MS McGARRY: I don't know what you've seen. You've seen the table, I assume, of the particle size distribution. My question is, have you seen the source data behind that?

DR PETER LONGDILL: I've seen the PSD table for the 13 different samples from 10 locations which was used was to form the PSD for the run of mine sediment. That was in response to my first memo. TTR made that available to me, yes.

MS McGARRY: Concerns have been raised by other experts in terms of the verification and the collection of that source data. Do you have any concerns about that?

DR PETER LONGDILL: More data is always better, but I took the locations to be, I would say, minimally adequate to characterise the area. The concern I had was that in how those 10 locations or 13 different samples had been put together. I did have a concern about that because they had taken different depth layers from the different cores, so they'd been selective how they had used that to average across.

MS McGARRY: In terms of this worst-case scenario, we've gone about that due to concerns about things that you address such as wave period and the percentage of ultra-fines. Did you have any consideration of the need for a sensitivity analysis to be undertaken in relation to the inputs?

DR PETER LONGDILL: Given the framework that was set up for the conditions and the suspended compliance, no. The reason I say that, if I sort of go a bit further, is the way that I see those conditions is the schedule 2 locations which were informed by the relevant people, ecologists and biologists, there was to be zero impact from the mining activity in terms of suspended sediment at those locations. I ensured through the dialogue with these conditions that any potential operator would have the tools and the information to make sure that they could comply to that.

MS McGARRY: The modelling is a suitable tool for assessing or predicting the likely impacts for mid-field and far-field impacts. It's been suggested to us by other experts that it's not the appropriate tool for assessing near-field or more localised impacts. Would you agree with that?

DR PETER LONGDILL: Yes, if you consider near-field to be, say, within --

MS McGARRY: I think we've got a definition of about five --

DR PETER LONGDILL: -- a few hundred metres.

MS McGARRY: Well, near-field is somewhere from the site to 3 to 5 kilometres, seems to be about the agreement. You think it's smaller than that?

DR PETER LONGDILL: I would normally interpret near-field to be a bit closer but I sort of look at that from a modelling context. You would generally use different tools for near-field and far-field modelling, which indeed was the case here. So, I would generally consider near-field to be a shorter distance than 5 kilometres.

MS McGARRY: I think some of the witnesses we've seen have said near-field was sort of zero -- I think 5 was probably the upper one and then it would be from 5 to 50, I think it was, or ... and then further than that would be far-field.

[11.00 am]

DR PETER LONGDILL: Yes, I guess I would probably -- the way I would normally say it would be a near-field type model is going to give you quite good information within 300/400/500 metres, perhaps. A mid-field model would go beyond that up to around 3 kilometres. Beyond that, what I would call the NIWA model, the NIWA plume dispersion model, is adequate. But for what I would call the near-field, I guess in my

experience I think you're basically just ... if you decide to award the consent, I think you're basically saying you're not too concerned with things within that near-field.

MS McGARRY: You've talked about receptors and the approach you've taken to receptors. If the DMC forms the view that there are ecologically sensitive receptors closer to the application site than those that have been identified by the applicant, it sort of comes back to the question that I just asked you. What is your level of confidence in the modelling that's been done? How close to the site ... I'm putting the question around the wrong way, actually. Where does the modelling have its limitations in your view? How close? We've just talked about around it, about the near-field. Where does your level of confidence drop off close to the site?

DR PETER LONGDILL: Let's say the way it's done at the moment, I would say within 2 kilometres from that mining area. The only sort of note of caution I would place on that is in that NIWA plume modelling, the far-field dispersion model, they simulated a source from, let's say, two locations within that permit area and if you were interested in something that close, within 2 kilometres, yes, I think the model's the right tool, could give you some good answers. But you would probably want to simulate the mining activity at some different locations. You would want to review that decision that had been made to leave it as only two sites within that permit area.

MS McGARRY: Are you comfortable that you were provided with any details of the pilot plant and how the bulk samples for Wallingford were derived?

DR PETER LONGDILL: I could have had more information, of course, yes, on that trial grind, differences between that and the proposed plant if there are any differences. That said, though, with those ... for me again it comes back to the way those schedule 2 limits were set out. I think you don't have to solve everything with those issues.

The way that those conditions had been worked out, there was a fixed limit at those locations. The tool which would be used to manage the compliance or to manage the operation would be fed with a lot better information around what's actually coming out of that plant than any test you could do now with a trial plant or not. It will be fed with the actual information. But your compliance is still the same. It's zero at those locations that you are particularly concerned about.

MS McGARRY: Have you seen the new set of conditions that have been put before us in the last day or two? No?

DR PETER LONGDILL: I've seen a title page. I've got a file in my in-box but I haven't read them and reviewed them.

MS McGARRY: That's okay. I just want to know whether I'm talking to you about the previous conditions. I haven't had the chance to digest the new conditions myself. The accuracy of the modelling is highly dependent on how the processing plant behaves, which you've just talked about, and the actual run of mine percentage of fines. The condition at the moment that's before us, and I'm not sure what you saw, but the revised condition says that the percentage of fines will be limited to 1.8 per cent averaged over a week. Have you got any comment about that? First of all, does that fit with what you were talking about in terms of conditions back when you reviewed?

[11.05 am]

DR PETER LONGDILL: Yes. I think the time period was probably a little bit longer when I was reviewing it. I think it mentioned reporting period, so it could have been taken to be longer than one week but one week would be more precautionary.

MS McGARRY: You're happy for that to be averaged over a week?

DR PETER LONGDILL: Yes.

MR SHAW: Unfortunately, a transcript won't record the look on your face.

DR PETER LONGDILL: That took a few seconds for me register that in my brain but, yes, thanks.

MS McGARRY: Some concerns have been raised that the three samples provided to Wallingford, that two of them still contained iron ore fines and that the presence of that iron ore would have affected the flocculation results. Have you got any comment on that?

DR PETER LONGDILL: I'd say yes, potentially. Flocculation is still, I think, going to occur. It's a physical process. The sample they did take certainly did show that it occurred. More tests would be great. Is it really going to change the outcome or my opinion? I don't think so, no. I don't have a real firm opinion on saying there should have been more flocculation testing. It would have been good but not overly necessary, given those conditions and things that we worked out.

Because again, if I go back again, the way that I looked at those conditions, we were putting less reliance on the model we had now, which is still the model before you, and more reliance on a model which would be filled with the actual data should that consent be awarded.

MS McGARRY: Some of us have raised concerns that the ultra-fines have the potential to just continuously circulate round the South Taranaki Bight and it's really the cumulative effect of the discharge adding those ultra-fines to the wider environment. Have you got any comment on that risk? Have you looked at it from that angle or are we getting outside of your expertise?

DR PETER LONGDILL: Yes, I guess we're getting outside a little bit. But all these particles do have a settling velocity. They do sink, some of them very, very, very slowly, and they will be remobilised. On the scale of what's out there already, by the time it disperses around, my opinion is at most locations when it's talked about in a general context like that, I don't think you would really measure a difference or ever be able to see a difference.

MS McGARRY: I think my last question is outside your area. It was really in relation to -- you probably know maybe in your experience whether there's been any studies done in terms of the effects of certain suspended sediment concentrations on particular species and the duration of that exposure. Are you aware of any work that's been done in New Zealand in terms of our species?

DR PETER LONGDILL: New Zealand in this context, no. Overseas, yes, but with animals and plants that don't ... of course it's specific to each organism. But it's a common thing to do. It's a common way to approach the issue, yes. It just requires a lot of research.

MS McGARRY: Thank you, Dr Longdill.

MR SHAW: Mr Coates?

[11.10 am]

MR COATES: Thanks, Dr Longdill. Kia ora. Ms McGarry's questions traversed the areas I'm mainly interested in so I won't go through those again. Thank you.

MR SHAW: Dr Thompson?

MR THOMPSON: Unfortunately, Ms McGarry was pretty thorough so she's left the plate clean, so no further questions, thanks.

MR SHAW: Dr Longdill, I have a question from one of the parties, or a couple of questions from Ms Haazen who's appearing for KASM and Greenpeace. The first question is, do you agree that longer wave period should have been included in the worst-case plume modelling?

DR PETER LONGDILL: If you want to really take the worst case then I would say yes. The only caution I would put with that is what do you want to do with the output from that worst case? Because with the way these modelling tools work, you can, let's say, tweak all the dials to maximum and you'll get a result but then you've got to decide what you're really going to do with it. What's the probability of all those dials getting turned to maximum at the same time? That would be my nervousness. But if you're taking a worst case then yes, for sure.

MR SHAW: The next question, a submitter, Dr Malpas who is a sedimentologist, has stated that only clay particles flocculate, and mud and clay are not synonymous. Dr Malpas said that she was unable to find geochemical analysis within the TTR documents or more generally of Taranaki and the site. Are you clear on the geochemical makeup of the fines and the run of mine and discharge and can you comment on Dr Malpas's observations?

DR PETER LONGDILL: I guess the geochemical makeup, no, I'm not familiar with it. I haven't really dug down or drilled down into that. It's a little bit outside of my area of expertise. The way that I'm familiar with it is clays are more a size range on a particle size distribution curve. I've been involved in studies where those particles flocculate whether you or I would call them taken from a sample of sand or not. But, no, geochemical, I haven't looked into it, not familiar.

MR SHAW: Any further questions from parties? No from Mr Holm. Nothing further from you, Ms Haazen? Mr Anderson, anything from you? Okay, thank you. Dr Longdill, I hope we haven't kept you from your dinner for too long, since it's evening there, or your bed depending on how late it is in the evening.

DR PETER LONGDILL: It's got a transition to morning time now so I can officially say good morning.

MR SHAW: Goodness gracious me. We are very, very sorry indeed.

DR PETER LONGDILL: No, that's fine.

MR SHAW: Thank you for making the effort and that concludes our discussion with you.

DR PETER LONGDILL: Thank you.

MR SHAW: Okay, we move now to ... and Mr Anderson, you're done for the morning now as well.

MR N ANDERSON: Yes, with the registry about the additional information that we referred to.

MR SHAW: That would be good. Thank you. Ms MacLennan? That's absolutely right, Ms MacLennan. Ms MacLennan, thank you for joining us. The Committee has received and read your submission. We'd invite you to introduce yourself and to expand or otherwise address the concerns you expressed in your submission, and then there may be questions from the Committee.

[11.15 am]

MS MacLENNAN: Is that better? Okay. Following the last presentation, this may come across as potentially naïve. I'm not an expert in geology, marine biology or economics but I've read a lot of the experts' reports. As background and to explain the motivation for fronting up today, my expertise is in medicine. I've been working until recently as a hospital specialist. At present I see a health system and dedicated professionals struggling under the load of an epidemic of physical and mental illness, and gross inequities caused by current lifestyles and business as usual.

Over the past ten years or so, I've also become knowledgeable about aspects of climate change, and in particular, the impacts of climate change on human health, health equity and health systems which were described by the Lancet Medical Journal a couple of years ago as a medical emergency. I fear for the future health and wellbeing of today's children and young people as we continue to plunder the planet's resources and burn fossil fuels at a great rate. Business as usual.

Although I've lived and worked in New Zealand for many years, my spiritual home is on the Isle of Skye, part of the Scottish Inner Hebrides so I have a deep love and respect for the sea and all its moods and with all its life forms.

My issues with the proposal are largely to do with environmental damage caused by the proposed mining in a rapidly changing world and the consequent dangers to health and wellbeing. I note that in section 59 of the EEZ Act, the EPA must take into account the effects on human health that may arise from effects on the environment. I support the submissions of groups such as Kiwis Against Seabed Mining with Greenpeace, Climate Justice Taranaki, and of course the Taranaki iwi who have so much to lose.

There are predictable and unpredictable adverse impacts of the intended mining. From the various reports, we know that there will be disruption of the seabed with destruction of many of its creatures. It is likely that there will be diesel and waste contamination of the sea and seabed with

all the vessels and activities proposed. Unpredictable events would include accidents or earthquakes shifting ships or heavy equipment, possibly even causing catastrophic damage to Kupe's platform or pipelines. I realise that's relatively unlikely. There are also a host of possible but uncertain impacts with noise, pollution, altered visibility and sediment affecting many species of marine life and their food chain with knock on effects for human livelihoods, food security, toxicity and cultural wellbeing.

We have to remember, however, that these changes will not be happening in an otherwise stable environment. There is already increased anthropogenic sedimentation and pollution due to land based industrial and agricultural waste washing out to sea. Last year, the Ministry for the Environment reported on multiple cumulative human pressures causing changes to our oceans, marine habitats and wildlife. They also warned that those changes seriously threaten benefits from the marine environment for current and future generations.

With climate change, increasing carbon dioxide dissolving in the sea is causing acidification, putting pressure on many organisms particularly shellfish. We will experience increasingly violent storms with risks of transport disruptions and damage to ships. The oceans are warming and MFE warns that this may affect currents, modify habitats and expand or reduce the areas where marine species live so today's assessments may not hold true in 20 years' time, in fact are unlikely to.

Most of our marine birds are already threatened with extinction as are a quarter of marine mammals, and we're also seeing degradation of coastal ecosystems including Taranaki. This is shocking.

[11.20 am]

We are utterly dependent on the natural environment for life, health, and a robust economy. Nurturing biodiversity and particular ecosystems is critical to the ongoing health of New Zealanders so why risk it by adding an activity with so much uncertainty in relation to ecological and economic outcomes? Considering the importance of the activity, maybe it's a bit naïve, but with all the realistic and potential irreversible damages, there are good ecological and economic arguments for recycling more steel, thereby reducing fossil fuel use, greenhouse gas emissions and easing the landfill problems rather than the disruptive process of extracting iron ore. That could be controlled within New Zealand.

Thirty-five years is a long time, taking us beyond mid-century and into a very different world. 2016 was the hottest year yet and carbon dioxide levels are now over 400 parts per million and rising. We're heading into

unchartered territory. This project would both to some degree contribute to climate change and be adversely affected by the changing conditions in unpredictable ways.

It is critical that we get out of the business as usual model and do everything we possibly can to improve the health and resilience of our ecosystems and human communities. Thus, I oppose this application and encourage the Committee to decline it in its entirety. Thank you.

MR SHAW: Thank you, Dr MacLennan. I had a great aunt who was a retired GP who lived at Caila(?) Loch House, so when I visited her, I looked at the Isle of Skye on a fairly regular basis.

Dr MacLennan, I'll just see if my colleagues have got questions for you. Mr Coates?

MR COATES: Kia ora, Dr MacLennan. Thank you for your submission. Given your background, I just wanted to check out the statement that when you mentioned that some ecosystems may have evolved to accept the conditions of iron in their environment, and I just wondered whether you mean that removing the iron from the iron sand, even though it's deposited back, will in fact cause a different benthic community to re-establish.

DR MacLENNAN: I'm not an expert on that. That was just top of my head sort of thinking about how human body, how other systems evolve. I don't know the answer to that. It was a question.

MR COATES: Thank you. That's all for me.

MR SHAW: Ms McGarry?

MS McGARRY: Thank you for taking the time to come and speak to us today. You're not an expert, but you gave a very articulate submission to us. In a nutshell, you're trying to highlight for us your concerns about a cumulative effect on what's already in your view a stressed environmental system?

DR MacLENNAN: Yes.

MS McGARRY: Thank you for taking the time and coming to reinforce that to us. Thank you.

MR SHAW: Dr Thompson?

MR THOMPSON: Thanks, Dr MacLennan. No questions, thanks.

MR SHAW: None from me, Dr MacLennan. Thank you very much.

DR MacLENNAN: Okay, thank you.

MR SHAW: I should say, just before you go, it's been of recent days a recitation to all submitters that many of the apprehensions that submitters express in their representations are made by others. Most of the questions that are made have been explored at some length earlier in the process so don't take the relative lack of questions as being a matter of disinterest or dismissal.

DR MacLENNAN: Okay, thank you.

MR SHAW: Okay. Thank you. Ms Woods, Kirsty Woods? Welcome.

MS WOODS: Kia ora koutou.

MR SHAW: Kia ora.

MS WOODS: I'm Kirsty Woods. I'm employed by Te Ohu Kaimoana Trustee as a principal analyst, and I've summarised my qualifications in my evidence and take it as read. I'd just like to give you an advance warning I might cough. I can't get rid of this cough I've got so I apologise if I end up interrupting what I'm saying in the middle of a cough.

[11.25 am]

MR SHAW: We're all infected already at the moment, Ms Woods.

MS WOODS: Yes, I'm sure you are.

MR THOMPSON: From New Plymouth.

MS WOODS: I have got a PowerPoint to talk things through, but I think you've got hard copies in front of you as well.

MR SHAW: We do, yes.

FEMALE SPEAKER: It'll come up now.

MS WOODS: It'll come up? Okay. Just some background about Te Ohu Kaimoana. We're a trustee company established under the Māori Fisheries Act with a role to act as a trustee for the Fisheries Settlement. Our purpose and duties and functions arise from the settlement and include protecting and enhancing the interests of iwi and fisheries, fishing and fisheries-related activities. That's the perspective that I'm coming from today.

We work with iwi and the seafood sector generally to promote sound fisheries management, ultimately to protect iwi fishing interests. We're a member of various seafood industry bodies, including Fisheries Inshore New Zealand who submitted on the application. I don't intend to wander into a lot of the detail that they've already submitted to you.

To get on to our main concerns, in my original submission I raise concerns about uncertainty and a lot of the issues raised by the key issues report. The effects of the application on Māori interests and fisheries hadn't really been grappled with. Also concerns about the management of the adverse effects, conditions and whether limits are set right.

Clearly, you're grappling with a whole range of issues to do with the effects on the environment, the effects on existing interests and how those might be managed. At this point, I want to focus the rest of this presentation on the central part, which is the nature of the existing interests that Māori have in the Fisheries Settlement which is quite explicitly provided for under the EEZ Act. In so saying, I want to acknowledge the issues that have been raised by iwi, Ngāti Ruanui, Ngā Rauru and other iwi, and acknowledge their evidence and also the evidence brought by Fisheries Inshore New Zealand.

To get to what I'm going to say and to summarise my evidence, I want to provide an additional lens through which the effects of the application could be seen or should be seen, but hasn't really been teased out in the application or the impact assessment.

This diagram, I haven't provided in my evidence but I thought it might help to better explain some of the points that I've made. The Fisheries Settlement arises from Māori claims to customary fishing and I notice that in the schedule I'm down to talk about customary fishing. Essentially, myself and our organisation would see customary fishing as arising from a broad range of rights. The claims that Māori made in respect of fishing covered a whole wide range of uses from commercial to gifting, storage, family use and so on. So customary fishing rights essentially contained a commercial right, a development right and so on.

When the settlement of claims was made, the actual settlement and the implementation of it divided those interests across two different management regimes, one dealing with commercial fisheries and one dealing with non-commercial. That in itself raises a whole lot of dynamics in terms of how you identify what the interests of Māori are under the Fisheries Settlement.

I'll explain both aspects briefly, which I've given you more information about in the evidence. For the commercial fishing, Māori endorsed the QMS as part of the settlement as an appropriate regime for managing

commercial fisheries. Quota is the currency of the settlement, which provides 10 or 20 per cent of every stock in the quota management system, depending on the time they were introduced. Māori accepted that catch limits could go up and down to ensure sustainability but didn't accept their rights to access fish could be reallocated for other reasons.

A major question to be addressed was how quota - which is now classified as settlement quota - would be allocated to Māori. It was finally agreed that allocation would be to iwi based on each iwi's population and/or coastline and the mix of that depended on the kind of species that we're talking about. For allocation purposes, stocks are classified as either inshore or deepwater, based on a number of criteria in the Māori Fisheries Act.

[11.30 am]

Inshore stocks are allocated to iwi based on their coastline and I'll go through to a diagram in a minute that explains how that works. In deepwater stocks, 75 per cent of any settlement quota is allocated to iwi based on population. So that means every iwi gets a portion of that 75 per cent, and then 25 per cent is based on coastline.

I'll show you two examples that are in the evidence of what this means for stocks that intersect with the Taranaki Bight and how Māori interests might be identified. With Snapper 8, what you have here is an inshore stock and essentially all iwi from the top of the North Island down to near the bottom of the North Island who have coastline that intersects with that quota management have a commercial interest in that stock. They hold a portion of the settlement quota for that stock.

While the impact assessment provides a very brief reference to the Fisheries Settlement and lists eight iwi organisations in the Taranaki area as organisations who have implemented agreements under the settlement, in fact there are 22 that I've listed in the evidence. They're all the ones that border the quota management area.

It's important to note that the other issue is that the entitlement to catch the quota that is generated every year can be caught by iwi or on behalf of iwi anywhere in that area. For example, the catching of the entitlement's not restricted to their own traditional areas; it can be caught anywhere in that quota management area. That's one layer of the interests of iwi under the settlement. Jack mackerel is just another example of a deepwater stock; it's classified under our Act in that way.

I've said in the evidence there are 57 iwi with an interest and I need to correct that and say there are 58. As part of the allocation model, there's a number of iwi who formed mandated iwi organisations as part of a

group and the individual iwi have got the right to withdraw. In one case, an iwi has done that so we now have 58 iwi. It doesn't mean the assets have increased; it means they've got to agree on how they share them. In relation to this, 75 per cent of the quota and settlement for jack mackerel is shared by 58 iwi and the other 25 per cent by all of the iwi along the coastline there.

To get to the customary fishing, the non-commercial part of customary fishing, as part of the settlement the Government agreed to promulgate regulations that would enable tangata whenua to manage their customary fishing interests and so on. A number of regulations sit in the Fisheries Act which are partially implemented around the country, not completely. Once they're implemented, what it means is that tangata whenua who wish to implement the regulations have to notify the area that they wish to authorise fishing in. That gets debated and is open to objections and so on and, once it's approved, kaitiaki that they appoint are able to issue customary fishing authorities within that area. That's how it works. That's much more defined in terms of traditional areas or areas that those iwi will argue they have some mana whenua rights over.

What I thought I'd add in here is a diagram - this is from the Government's National Aquatic Biodiversity Information base - that summarises how far those regulations have been implemented. Each of those red-outlined areas represents a rohe moana that a hapū or an iwi has designated and within which they have kaitiaki who can authorise fishing for customary purposes.

You'll see in the Taranaki area they've yet to be fully implemented. In the meantime, customary fishing is regulated through a different transitional regulation under the Amateur Fishing Regulations that enables customary harvest for hui and tangi. The iwi in that area are working together to look at how they might implement the regulations in that area to meet a number of different needs. Some of them might be related to individual iwi, and in the case of some of the initiatives that are being developed at the moment, it's in the case of a collective.

I've pointed out the idea of a pataka system that some iwi have started to work on; there are already two pataka that exist, based out of New Plymouth. How they operate is that the iwi involved appoint kaitiaki who can issue a permit to a commercial vessel and that vessel has to classify all of the catch caught under that permit separately. It's brought in and stored in a factory and then the iwi whose kaitiaki have the role in managing that inventory and approving the fish for distribution.

[11.35 am]

There are other proposals in the wind, for example, from iwi across the top of the South Island and right up into the northern Taranaki area, who are looking at how they might designate a rohe moana they might share, simply for the purpose of a pataka system using a commercial vessel.

The point I want to make is that while traditional customary fishing has been painted in the assessment as something that's static and that never happened in that particular area, it doesn't mean it won't. We're not dealing with flax nets and bone fish hooks here. Not only was the commercial right part of a development right, but just the way that fishing happens generally is developmental as well but still based on traditional relationships and tikanga. The way it's carried out can evolve.

What I'm saying here is that the assessment doesn't really touch on any of these nuances. It doesn't grapple with the commercial side of the settlement and what it really means or look at how you might assess the effect of the application on different fish stocks, who the interests are, whether they're important from a commercial perspective or a non-commercial perspective and then who are the interests. That's something that's been addressed inadequately in the application and it's a job that still needs to be done. I know iwi have probably already given you information about some of their more local interests, but the interests of iwi under the settlement are essentially multi-layered and evolving and need to be better understood in this context.

Now I'm open to questions if you want to.

MR SHAW: Thank you. I also should have begun by apologising for the fact that we were unable to see you when we were in New Plymouth. Events didn't overtake us; just simply ...

MS WOODS: No, I understand that and then I wasn't able to appear when you would have liked.

MR SHAW: Later in the hearing.

MS WOODS: Ultimately, I would have liked to have appeared in New Plymouth, but that wasn't going to work either so that's fine.

MR SHAW: No. Okay. We'll turn to questions. Dr Thompson?

MR THOMPSON: Yes, a question about customary fishing. How does that impact on recreational fishers? Is there any overlap or any conflict?

MS WOODS: The conflicts seem to be more between commercial fishing and recreational, as far as I'm aware. The local people in different areas -

particularly when fishing in the summer; particular stocks get hammered - local marae and communities certainly can be concerned about the extent of recreational fishing that happens. There can be a conflict to that extent.

Talking about the particular area, I can't really comment on detail, but certainly it's something that can happen. Probably the concern is more from the tangata whenua side, I would say, particularly in high population areas where people turn up to a place en masse during the holidays.

MR SHAW: Okay, so you've read my question, the word "conflict" being some aggravation.

MS WOODS: Yes.

MR SHAW: I didn't entirely intend that meaning. It was: is there some overlap --

MS WOODS: Overlap?

MR SHAW: -- in terms of regulations? You referred to customary rights regulations, I think.

MS WOODS: Under the Amateur Fishing Regulations?

MR SHAW: Yes. Does one impact on the other in that sense?

MS WOODS: In terms of the regulations?

MR SHAW: Regulations.

MS WOODS: No, if I am understanding your question, in terms of the regulations themselves, the transitional provisions that enable customary fishing are one of the regulations that just exist within the Amateur Fishing Regulations, and that's something that's historical. I'm not aware that there's a particular conflict in terms of the fact that it's sitting there. I think the issue for iwi more is how to get into the regulations, the new regulations that are sitting in the Fisheries Act, which give them a lot more flexibility about how they manage their interests.

MR SHAW: So recreational fishermen can live in harmony with these new regulations?

MS WOODS: They can. Spatially, the two can happen in the same area and they all happen in the same area unless there's some provision that stops that. I guess the issue really that plays out on the ground depends on fishing

pressure and the impact of one on the other in a kind of a fishing sense. I'm not sure if that's fully answered your question.

MR SHAW: I think I understand. That may be another thing. I'll ask another question. In Lake Rotorua, for instance, you would obtain a fishing licence from iwi.

MS WOODS: In Lake Rotorua?

MR SHAW: I think that would be the case.

MS WOODS: Certainly, under the kaitiaki regulations which are the ones that are there to be implemented, they can be implemented in a freshwater environment. I'm not sure of the status of the lakes in respect of the implementation of the regulations.

[11.40 am]

MR SHAW: Freshwater fishing is licensed.

MS WOODS: Yes, and again it comes --

MR SHAW: From a recreational point of view whereas saltwater fishing is not.

MS WOODS: I guess --

MR SHAW: It's regulated in terms of what you can take.

MS WOODS: Yes, mind you with eels, they're managed under the quota management system and customary fishing can happen with eels in lakes and rivers as well. I think it's more a question of the particular species that's being managed than necessarily fresh water being a separate thing. For example, it would be possible to designate an area under the customary regulations that enables a kaitiaki to issue an authority to fish for eels, for example.

MR SHAW: Thank you.

MS McGARRY: Thank you for coming to speak to us today; we do appreciate it. We've heard a number of representations from submitters, talking about their concern for an already stressed and degraded environment. I wonder if you've got anything to add to that perspective. Is there acknowledgement or is it known that the customary fisheries are already under stress from a general degradation or general decline? I don't want to put words in your mouth.

MS WOODS: No.

MS McGARRY: Is that an aspect you've looked at?

MS WOODS: That's something I can't say an absolute yes or no to; it would depend on the fishery. I know that local communities around the country, Māori communities, are always concerned about the status of the fisheries that they've got an interest in. I'm sure iwi in Taranaki are no exception.

Just trying to think if there's any particular examples I can raise; I haven't looked into it in great detail. One of the things that we'll often do if there's a particular stock under review, for example, by the Ministry is try to look at all of the aspects, look at the science and work with iwi to establish what we should be advocating in terms of management. In this instance, I haven't looked at it in particular detail for this purpose because I think it's more a question of have the impacts ultimately been adequately assessed.

MS McGARRY: Yes. You've touched on the dynamic nature or the evolving nature of this space and that we mustn't look at it as a static thing. There's obviously a point where we can't gaze too far into the future. Is what you're saying to us really that such an application could have an effect in terms of an opportunity costs on customary use?

MS WOODS: It could; there is that potential and the work to really assess that properly hasn't been done.

MS McGARRY: Yes. Thank you.

MR SHAW: Mr Coates?

MR COATES: Tēnā koe, Ms Woods. Kia ora mō tō kōrero.

Just a couple of questions. The diagram with the red lines on it show a couple of sectors in the South Taranaki Bight which appear to intersect with the application area. The extent of those sectors: do they go to the EEZ limit?

MS WOODS: The ones that are expanding out from, it looks like, Patea/Whanganui, that area: the reason they would stop where they are - and I could check that - is that they've got to the edge of where the South Island fisheries waters begin. Under the customary regulations, there's a South Island set and a North Island set and so there is a boundary that's established beyond which each can't cross into the other. That would be the reason, I'm assuming.

MR COATES: The top of the South, tribes/iwi would --

MS WOODS: Would not go beyond that, except that in terms of some of the thinking that's happening at the moment and the work that iwi across the top of the South Island and in the broader Taranaki area are doing, they're looking at how they can work together to share an area that crosses both. People have thought very narrowly about how the regulations might work. In fact, there's quite a lot of creative thinking that can be done still, based very much on tikanga and traditional relationships but that actually help to meet the needs in a more modern context. I guess it might be possible to try to establish an area which is covered by both, but that's something that's still being explored.

[11.45 am]

Coming back to your question, I would say the reason for that is simply that it's at the boundary of the regulation area. As you'll see, all the ones further north, most of them go out to the edge of the EEZ. Even if fishing isn't always happening across it, it can and especially if people are starting to think about pataka systems and the use of commercial vessels.

MR COATES: In your submission, you talk about the "High Sea State".

MS WOODS: Yes, I wondered if you were going to ask me that. I haven't looked at this anymore. It was something that was raised last time and perhaps some of that's been dealt with this morning; you're looking at your worst-case scenarios and so on. That was relating to sediment, but I guess there are other issues around safety and the vessel itself.

MR COATES: It's not a major issue of concern for you?

MS WOODS: I guess I would perhaps ask. Has the Committee had sufficient information to satisfy itself that it's not a concern?

MR COATES: You're talking about storm events?

MS WOODS: Yes.

MR COATES: Yes, I think we have covered that sufficiently.

MS WOODS: It was really just a question raised that it doesn't seem to have been covered as it had been last time.

MR COATES: Wave periods and heights included as part of the modelling?

MS WOODS: Yes.

MR COATES: You also say, "We do not consider this application can be granted as sought" and in your presentation, your conclusions don't mention that at all. I presume that still stands.

MS WOODS: Yes. Obviously, you're looking at changes and more information, but I don't think I'm in a position to move from that position.

MR COATES: Thank you. Kia ora.

MR SHAW: Nothing more from me.

MS WOODS: Okay.

MR SHAW: You're appearing, giving evidence on behalf of your organisation as opposed to a simple representation.

MS WOODS: Yes. That's right.

MR SHAW: I'll just see whether other parties have got questions for you. Nothing from you, Mr Holm?

MR HOLM: No, thank you.

MR SHAW: Mr Currie? Nothing from you. Okay, thank you very much, ma'am.

We're due to break for lunch and because I'm a little nervous about the afternoon in terms of getting through things, we will go through until midday. We'll start with Mr Govier, hear his presentation and comment on his evidence, and we will break before we ask and deal with any questions of him. Then we'll return to that and follow the schedule as it's set out. Mr Govier, if you are here? By a whisker.

Good morning, Mr Govier. I think you've probably sat through enough of the hearing to understand what the process is for people in your situation. This morning, what we will do is take you through to complete your presentation. Then we'll return to ask any questions that either members of the Committee or parties may have for you.

MR GOVIER: Okay.

MR SHAW: Off you go.

MR GOVIER: Thank you. Good morning, Mr Chairman and Committee. My name is Daniel Govier. I'm the Asia Pacific technical discipline manager of the marine science team for SLR Consulting. I hold a BSc in Zoology, a Postgraduate Diploma in Marine Science and a Master's Degree in Marine Science, all from Otago University. I've 15 years of professional

experience, in particular conducting marine ecological surveys, most of which have been around the Taranaki coastline.

[11.50 am]

Just want to include some of my non-professional background as well in relation to this project. I've grown up in Taranaki and I've been involved with the marine environment my entire life. I have recreationally and commercially fished throughout the Taranaki and Whanganui region for many years, in particular off Ohawe, Patea and Whanganui. I hold a commercial skipper's ticket and my family own Area 8 fishing quota. So I know the Taranaki coastline very well.

I worked for Taranaki Regional Council for four and a half years as their marine ecologist. As a result, I've surveyed a large number of estuaries, rocky intertidal reefs, subtidal habitats around the Taranaki coastline, in particular the South Taranaki Bight.

While at the TRC, I was involved in the consenting of the Kupe field as well as the Port Taranaki capital and maintenance dredging programme. I noted there were a number of questions in the Taranaki hearing around the dredging programme. I developed and conducted the monitoring programme for this project, which included intertidal, subtidal, kaimoana and sand distribution monitoring on a number of reefs along the Taranaki coastline.

I've also worked at the Cawthron Institute where I undertook all the compliance monitoring for the New Zealand king salmon marine farms. This involved monitoring for effects from point source discharges and assessing the effects of consented activities on the marine environment.

Since 2010, I've been undertaking annual surveys of three north Taranaki intertidal reefs for a client, which was undertaken in conjunction with Te Atiawa hapū members. The purpose of this monitoring is to establish a data history and further understanding of the marine communities which are present, as well as gaining an insight into the influence of the sand inundation which naturally occurs along this coastline.

Over the last several years, I've worked largely with the oil and gas industry. SLR undertakes all the marine environmental monitoring programmes for the offshore oil and gas operators in Taranaki such as STOS, OMV and AWE.

As a result of my background, I'm very familiar with all the sampling methodologies and techniques proposed which have been in this monitoring programme that we're going to discuss today. I have significant experience with the Taranaki marine environment.

Firstly, just want to say there's been a name change to one of the monitoring plans as a result of the expert conferencing on the planning and conditions. That was in the conditions which have been tabled with you a couple of days ago. What was the Baseline Environmental Monitoring Plan has now been replaced with the Pre-Commencement Environmental Monitoring Plan as it was considered it created confusion. So, Mr Shaw, we've got another acronym for you, PCEMP.

MR SHAW: That sounds like a nasty chemical.

MR GOVIER: My evidence provides an overview of those monitoring plans and my presentation here today is just to provide a very high-level summary of these plans and then what changes have been made to them as a result of this hearing process.

The monitoring plans have essentially been designed to capture the spatial and temporal aspects of the project throughout the South Taranaki Bight where the key project-related effects are the removal of the benthic organism, operationally-derived sediments and then the sediment plume where the main focus is around the suspended sediment concentration.

From my experience of marine projects around New Zealand and sampling, I would say that these two monitoring programmes which have been proposed are the most robust monitoring programmes which are in New Zealand in terms of the environmental parameters which have been monitored, the spatial scale and both the temporal scale which they are covering.

There was a number of different components included within these plans. I'm not going to go through them; they're listed here just to show that they're very detailed throughout.

MR SHAW: Mr Govier, could I just ask you to go back and repeat what you had to say just before you got on to this next slide, about the quality of the programmes?

MR GOVIER: From my experience, it's one of the most robust monitoring programmes proposed in terms of the parameters which have been monitored.

MR SHAW: Fine. I just hadn't heard you clearly. That's all I wanted to hear.

MR GOVIER: Yes, sorry. The spatial and temporal scale: there's nothing else of this scale and magnitude around in New Zealand in terms of offshore monitoring programme as far as I'm aware or been involved in.

MR SHAW: Okay, thank you.

MR GOVIER: Sitting alongside all these different components within the monitoring plans is a number of management plans and that is for marine mammals, seabirds and biosecurity.

The Pre-Commencement Monitoring Plan will run for two years and that will run for two years before any mining can take place. Essentially, it'll collate an environmental dataset which can be used to statistically analyse and quantify any potential environmental changes over time once the mining commences.

[11.55 am]

This will be undertaken on a fortnightly, monthly and quarterly basis throughout the two years, the different monitoring components. This is to provide information on seasonal variation on the ecological communities and the water column characteristics in the South Taranaki Bight.

During this two years of monitoring work, after each sampling event there'll be reports. There'll be quarterly reports, annual reports and then an overall summary report pulling everything together. What this will do is it'll provide a number of recommendations to what needs to be incorporated into the EMMP, Environmental Monitoring and Management Plan, which will be in place once mining commences.

After those recommendations have been incorporated, the EMMP can then be finalised and implemented. What this will ensure is that the mitigation measures which have been identified as part of the impact assessment through this hearing process and the consent will be implemented and undertaken throughout the life of the project.

The purpose of the plan is ensure compliance with all regulatory requirements and guidelines which have been laid out through the conditions and the application as well. Within this plan, it'll detail the sample design, the methodology, the frequency, the duration, the locations, the data analysis which will be undertaken, and then the reporting requirements as well.

When I was first brought on to have a look at designing some monitoring programmes for this, I looked at all the environmental and modelling data that was available and also had a number of discussions with NIWA, Dr MacDiarmid in particular. This was around coming up with a sample design. What we came to is that there was no suitable control stations within the South Taranaki Bight environment that were close enough to have comparable natural variability to the main mining site

itself but could still be distant enough that the benthic environment and the water column are not affected by the mining activities.

What we came up with was a before/after gradient sample design. What this does is it allocates sample stations at variable distances along a transect away from the project area. Literature has shown that this sample design is far more powerful than a control impact sample design in detecting changes such as from the mining activity.

This will enable the chemical, physical and biological changes to be assessed as a function of distance from the disturbed area of the mining project area.

MR SHAW: Could you just briefly describe why it's a superior design approach?

MR GOVIER: For this particular area, because we've got the potential for suspended sediment to go around the South Taranaki Bight, there's a large area which it can go. With the modelling, we've got the average of where it can go, but smaller deposition can go in other areas. If you have a monitoring location where you're trying to compare in two points of time, if they are affected by mining it can't be compared effectively. There was nowhere that we considered in the South Taranaki environment with similar depths. You need to have similar depth, similar habitat types, water column characteristics to compare if there's been an impact. We considered that there wasn't. There's literature. I haven't got the references on me; they're in my evidence. It was concluded that this was the best method to robustly detect change through a varying distance.

The plume modelling was used to detect the primary concentration gradients of the expected sediment plume. We looked at the primary and secondary axes and then find the main deposition. Then we applied a cardinal approach to this monitoring design.

On the right-hand side image there, you'll see the monitoring locations. We've included a few more locations to what you'll have seen in the application document. Just want to point out: in the permit area, there's only three locations. We've increased it significantly as a result of the expert conferencing. I'll discuss this later on in this presentation. You can see most of the sample sites are to the east/to the southeast, which is the predominant direction of where the sediment plume has been predicted to go.

[12.00 pm]

On the left-hand side there, all those smaller dots are the different types of habitat which have been derived from the NIWA sampling. What we

wanted to do is we overlaid the sample locations with these habitat types because we wanted to ensure that we covered off each of the different habitat types. We've also gone, I guess, essentially in the secondary direction, secondary plume; so the areas where there's minimal deposition. In particular, out to the southwest, you'll see the yellow dots. That's bryozoan rubble habitat and it's considered to be more sensitive. We've made sure that we ran some sampling sites out through there and also through to the northwest where there was very limited deposition. Again, this will provide another validation process to the model as well to show that there's no effects there or, if there are, we'll be able to monitor that.

The suspended sediment concentration will be monitored continuously throughout the project. The details of this are within my evidence so I'll just provide a very quick overview. The way it's proposed to be done is instruments called ADCPs, acoustic doppler current profilers, will be used. These are instruments that can be deployed either on the seabed or mounted in surface buoys. What they do is they send an acoustic signal down through the water column or up through the water column and they reflect back off the particles in the water column. What that does it's essentially almost like a fish finder and it assesses the distance that they're down and then the size of those particles. It'll provide a reading in turbidity throughout the water column. Then there's calculations or algorithms which can be applied to those readings and convert them back into suspended sediment concentrations. Again, this is supported by the literature of converting the turbidity over to suspended sediments.

Prior to installation and deployment, these ADCPs will be calibrated to ensure that they're reading correctly with lab-based results of suspended sediments. They'll also be calibrated while in the field as well through the water monitoring programme. During the water monitoring programme at each of the sample stations vertical profiling will be undertaken with an instrument called a CTD. It's a unit which is lowered down through the water column, sensors are attached for conductivity, temperature, depth, etc, turbidity. A number of sensors will be attached to it and then that takes continuous reading up and down the water column. Likewise, in conjunction with that water samples will be collected a metre from the seabed and 5 metres below the sea surface. Those water samples will be sampled for suspended sediments and that again can calibrate the relationship between turbidity and suspended sediments which have been recorded off those instruments. Then those telemetered results from ADCPs will also be sent back hourly to shore from those buoys.

There's been a number of updates to the plan since the version that you'll have seen which have resulted from experts' submissions and the joint witness causing. Just going to run through them now briefly so you've

got an idea of what has been included so you'll see what will be in the next version.

Metal testing was proposed within the sediments, water column, etc, and a number of metals were recommended to be included. The full suite of metals are listed there, which will be included now in all of those monitoring programmes. I won't run through them, but every one that has been recommended by the experts has been included.

The biological indicators: that will be undertaken for metals. There was concern by submitters that there was potential that marine life can bioaccumulate metals and then they can be passed higher up the food chain into humans. What we've proposed is green lipped mussels - they're a great bioaccumulator - will be deployed in cages 1 kilometre from the project area and also at a location at the traps. Then they'll be tested every six months.

[12.05 pm]

Ecotoxicity testing will also be performed on the larval and adult stages of relevant local species. The intention of this is to assess the lethal and sub-lethal endpoints. This will be done on the fine fractions of the de-ored sediments. Obviously as part of the pre-commencement plan, those de-ored sediments won't be available so that'll have to be undertaken through lab processing onshore to get those fine sediment fractions to see what metals can be extracted out of them through the dilute-acid testing that the labs can do. Once mining commences, the actual fine fraction will be sampled.

Chronic ecotoxicity testing will be undertaken as well on dissolved particulate nickel and copper. Again, on those relevant species, both larval and adult stages. This is to assess potential long-term effects of those metals to those species. One clarification there as well for the taxonomy of benthic fauna and infauna. These will be identified to lowest practicable taxonomic level, ie, genus or species.

Of the tailings slurry, they'll be tested for acid volatile sulphides and this will provide a measure of the bioavailability potential of organisms which are inhabiting the seabed, of taking up these metals.

Pore water will be tested for metals. That's the water in between the upper layers of the sediment. That'll be tested as well as there is potential there that if there were any metals present, they can be ingested and bioaccumulated by the benthic organisms.

Eight beach sites between Kai Iwi and Ohawe will be monitored. These will be the same beach sites which were monitored by NIWA in 2012

and these will be assessed for rates of erosion/accretion and associated changes in beach volume as well. The same methodologies which NIWA used will be applied for this as well.

The marine mammal monitoring will now include any potential vessel strikes of any marine mammals and any post-mortems of any dead marine mammals as a result of that or around the project area.

Fur seals have been included into the monitoring programme, both the pre-commencement and once mining commences as well.

The acoustic surveys, once it's designed as well, will also include bottlenose dolphins and this will be using broad spectrum monitoring devices. Previously it was in there that they had Māui's and Hector's and blue whales but there's bottlenose dolphins. We'll have broad spectrum monitoring devices to pick up all the different frequencies of these marine mammals.

The resalinated water which is required as part of the processing of the ore and the transfer of the ore: when that's discharged it'll be tested every six months. That's just to ensure that it's not the resalinated water; when it's discharged, it's not another source of metals being introduced to the marine environment.

The Kupe field will have a number of monitoring locations incorporated around it as well, around the Kupe wellhead platform, the pipeline and the umbilical route.

The biosecurity monitoring plan will now include the surveillance for marine pests and in particular harmful algal blooms and non-indigenous marine species. This will largely rely on the primary productivity and the subtidal benthos monitoring programmes.

As I alluded to earlier, the operational monitoring: within the operation area for the pre-commencement, it will now include six monitoring stations. The placement of these monitoring stations will be based on the mining schedule. What we'll do is we'll place these locations in an area where they're not going to be mined in the first year or two. Essentially, this will show near-field effects once mining activity commences. Once mining commences and that first strip is undertaken, we'll place nine monitoring stations, monitored in triplicate, through that area. That'll provide in the end 15 stations which are going to be looking at recovery. That's not only recovery of the benthic organisms but also of the sediment composition and the sediment chemistry as well. That'll be throughout the life of the consent.

A couple of clarifications. There's been a bit of confusion between the marine acoustic surveys and the underwater noise monitoring as well. Just want to clarify that the marine mammal acoustic surveys have not yet been defined and prepared. I know there were some comments about the noise monitoring locations was not enough to assess how the marine mammals will be using the area. That hasn't been designed yet; an expert acoustician will be contracted or engaged to design that survey so I want to make that clear.

[12.10 pm]

MR SHAW: Can you make it a little bit clearer, Mr Govier?

MR GOVIER: Yes, sure.

MR SHAW: Presumably then at this stage and until the hearing is concluded, we will have no information on that element of the overall monitoring?

MR GOVIER: For the marine mammal acoustic surveys? No because that'll come as a result of, I guess, this hearing process and the expert conferencing. There's been discussions, I saw, about the number of locations that will be included that I've heard and that will all be built into it. I'm not a marine mammal acoustician and I can't comment on what the final design of that survey will be.

MR SHAW: No, I wasn't going to ask you about that. I was going to ask you in terms of the question of the adequacy of information whether that was a satisfactory situation from our point of view.

MR GOVIER: That the survey will be designed after?

MR SHAW: After the event, yes.

MR GOVIER: I guess from the expert's, Dr Childerhouse, which was given, there is an understanding of what marine mammals are likely to be using the area. It's more, I think, it's been a catch-all that has been applied where there was a number of marine mammals which could be using the area. Whether they are or aren't there, it doesn't change, I don't believe, the effects or the assessment. If they're there or they're not there, they have essentially been assessed as they are there. It's starting to get a little bit outside of my expertise with marine mammals.

MR SHAW: No, and I'm not asking you to comment on the expertise around marine mammals. What I'm trying to understand is whether or not we have here an approach in respect of the monitoring of marine mammals; whether that is consistent with the approach taken in terms of designing the rest of the monitoring programme.

MR GOVIER: I guess what it'll do is it'll verify the predictions which have been made in the impact assessment for those species which are there.

MR SHAW: We'll leave it for the time being. Thank you. It isn't a matter for you in terms of effects, but I just wanted to understand whether or not it was consistent with the approach taken elsewhere.

MR GOVIER: Yes, okay.

MR SHAW: Okay.

MR COATES: You'll have to point to page 182. It hasn't been paragraphed.

MR GOVIER: I do. I was going to correct that, sorry. Yes, I haven't got that many pages in my evidence, fortunately for you.

MR COATES: No. I thought I'd missed them.

MR SHAW: For some, it would demonstrate remarkable economy.

MR GOVIER: Yes, thank you, Mr Coates. Paragraph 182 of my evidence should read "2004" not "2014". That was in relation to two photos I included in my evidence of Greenwood Road and you can see them there at the bottom of that presentation there. I also included two photos ten years later from the State of the Environment Rocky Shore Monitoring Report as well which are of the exact same location, showing sand inundation ten years later.

I note Ms Smith and Ms Hammonds from the Ngā Motu Marine Reserve Society questioned my inclusion of these photos and that I'd failed to recognise that ongoing sand inundation had resulted in significant long-term decrease in species diversity. These six sites are monitored as the State of the Environment Report. I'll just have a bit of a summary on this. I've actually done this monitoring for four and a half years of that dataset so I'll just make a few comments on that report as well.

The six sites which are monitored: they're considered to be representative of healthy reefs around the Taranaki coastline, largely all away from marine discharges and most of them are used as control sites as part of compliance monitoring programmes by the TRC. The report states that trend analysis has shown there's "a significant decrease in species richness and diversity" at a number of Taranaki reefs which the report attributes to sand inundation.

Sand may settle on a reef for a short period time. Sometimes, it can be just for a period of a tidal cycle and at other times it can be for much

longer; so weeks or months. If sand inundation occurs, some species adapt. The more mobile species will move up to higher parts on the reef or they can move further offshore. Less mobile species, however, can be smothered. The intertidal species which live along the Taranaki coastline have adapted to this high energy environment where species can quickly recolonise when the sand recedes again and essentially they're opportunistic species.

[12.15 pm]

When you look at the report and you look at the median and mean results for species diversity of these reefs, Greenwood Road, which is the one in particular I was talking about, actually has the second highest result across the Taranaki region for both species richness and species diversity. Species diversity takes into account the number of different species and then the abundance of those species as well, and that provides an overall health index of the reef. As provided by the TRC, a diversity index of close to one provides an indication that it's a good representation of a healthy reef with an abundance of marine life.

Greenwood Road has a median diversity index of 0.94. I included those photos to show that sand movement is a natural phenomenon. It's been happening for many years and far longer than the TRC has a dataset for. I agree; sand does have a significant effect on the reef, but it all depends on how long the sand resides there for. When it moves on, marine life quickly regenerates back towards a healthy reef again.

In conclusion, an extensive monitoring programme has been developed to capture both the spatial and temporal components of the South Taranaki Bight. The monitoring design has incorporated the best available information, recommendations from the Government departments and agreed recommendations which have arisen during expert conferencing. The proposed monitoring approach has been designed to ensure that compliance will be achieved with consent conditions if it is granted.

MR SHAW: Okay. I think, Mr Govier, we will leave the response to questions until after the break.

MR GOVIER: Sure.

MR SHAW: It will provide a useful introduction to the other questions that undoubtedly will be put to you.

MR GOVIER: No problem.

MR SHAW: Thank you very much. As I said earlier, we need to be very careful about time today and I'm conscious of the fact that people have to go some distance to get lunch. For those of you who don't have a home base here, will 45 minutes work or will you need the hour? You look anxious to get out there, Ms Haazen.

MS HAAZEN: I would say we'll walk fast.

MR SHAW: Okay. I think that being the case, let's say 45. I don't think half an hour will do the business. We'll see people back here at 1.00 pm or shortly thereafter. Thank you.

ADJOURNED [12.17 pm]

RESUMED [1.05 pm]

MR SHAW: Mr Govier, we're going to ask you just to -- or I'm going ask you just to take a breath because I want now to address a matter of process that I would have liked to have addressed earlier in the day. It wasn't possible, but I am going to do it at the first opportunity, and that relates to scheduling, further information and expert conferencing.

We received this morning a memorandum from counsel for both the fisheries submitters and Ngāti Ruanui regarding the imposition that the additional or the extension of time that the Committee feels it requires and the revisiting of some evidence and some experts. We had a look at it; there will be a detailed response to it, Mr Dawson, but addressing the fisheries submitters alone at the moment -- and we'll deal with some of the others when we make a general comment on scheduling. I've got to make the observation, sir, that there's a wee bit of a contradiction between that memorandum and the one received, I think, yesterday, seeking the involvement of Captain Smith and further reconvened caucusing on fisheries. And I'll give you an answer to that as well, Mr Dawson, we will be doing what we said right at the outset in respect of the reconvened caucuses, and that is that they will be a caucus of the same experts who were involved at the outset, and I thought that that had been made really very clear in respect of any augmentation of these things. And that was in part, I think, a response to the concerns of submitters that we had - for want of a better expression - an even playing field rather than changing referees or changing participants halfway through the game.

So the answer to that is no. And I want to make the more broad point before we do get into the detail of the scheduling, that at the outset the Committee made it clear that it intended to run this as an inquiry and that we would be continuing inquiries until we had got all the information that we required. And it was very clear, I think, from most submitters

who were active participants that whenever new material became available they quite properly were interested in having the opportunity to comment on that. And whether we like it or not, that does require the recall of people in order to do that effectively. We're not going to stop doing that. We are well within the statutory timeframes for conducting this hearing and should we find ourselves in a situation where we are going to exceed the timeframe set out in the legislation, we will seek permission from those people we need to seek permission from, otherwise we are going to continue to look at the means by which we get the best possible available information or the best available information in front of us. This is not an RMA exercise; this is not any other courtroom exercise; this is an inquiry. And that means by definition that the process is iterative.

So, as I say, there will be a detailed response for those matters, Mr Dawson, but I thought I should make it clear to you just what that approach is going to be expressed by the Committee when it responds to your memorandum.

MR DAWSON: Thank you, sir. If I may just respond to a couple of the points that you've raised? Sir, with great respect I don't believe it is the role of the DMC to facilitate a process whereby an applicant can either introduce new information that should have been included with the application at the outset, or during the course of this hearing effectively recast its case, or recast its application, and that is the view that the fisheries submitters have come to.

[1.10 pm]

Now, our instructions are that the fisheries submitters simply do not have the resources to continue to go down the pathway that you've proposed in your memorandum, and we also consider that as a matter of law that it is unreasonable to expect our submitters to do so. In another sense, sir - and, again, I say that with great respect - it's not really your role to achieve consensus between the applicants or submitters, but to consider the evidence as it is presented by the applicant and take a view on that. I understand that it is an iterative process, sir, but I think the process that we've been involved in up to now has gone beyond that and I do think that this is unreasonable.

Sir, finally, where a process imposes unreasonable time and cost burdens on those who are driven to participate in order to protect their existing interests, it can also be as much of a breach of the party's rights to natural justice as a process that deprives them of the right to be heard at all. And, sir, we're at a point in this proceeding -- or certainly as the Fisheries submitters that they are saying to me -- and my instructions are, we cannot continue to proceed to participate in this process on the same

basis as we have up to now, and we've tried to set that out in the memorandum. What we are prepared to do, sir, is to continue on the way that we outlined, and that is to conclude the evidence of the witnesses that will be appearing here today and to attend closing. We did indicate that we would want to participate in the fisheries caucus on the effects on fishing well prior to the memorandum that we filed last night and we would want to continue to do so, notwithstanding what you term the apparent contradiction in that.

However, again, sir, I must respectfully disagree with your exclusion of Captain Smith from that forum because he is an expert in this area and his previous availability was limited because he was travelling to Tasmania. So, I don't propose to take you through the memorandum, sir, but I thought I'd just give you a thumbnail sketch of where our clients were at in this process. Thank you.

MR SHAW: I understand. I hope you do as well.

MR DAWSON: I do, sir. Thank you.

MR SHAW: Good. Okay. Mr Govier, we will return to you.

MR GOVIER: Cool.

MR SHAW: And I think begin with you, Ms McGarry, in terms of questions for Mr Govier.

MS McGARRY: Thank you.

I've got a lot of questions relating to your original brief of evidence.

MR GOVIER: Oh, yes.

MS McGARRY: But the point that we've come to with the new revised conditions, I'm going to try and just pick out the eyes of those. Some of them have been -- well to be honest, I haven't had enough time to digest the new set of conditions to actually engage meaningfully with you. But in saying that, I do have some conditions that still stand in terms of your evidence.

In terms of paragraph 31 of your evidence you talked about a number of sensitive sites that were identified during the impact assessment process, and that those are being incorporated into the monitoring programme. My question really is, having heard the evidence that has been presented throughout the process regarding other sensitive sites perhaps closer to the application area, have you responded to that? You've given us an overview there but I want you to particularly respond to that point,

basically whether you have agreed that there are some sites closer to be included.

[1.15 pm]

MR GOVIER: Okay. Just in response to that; so those sensitive sites, for example, that have been identified by the TRC in the 12 nautical miles -- so the traps etc for the limits, and I guess one example of those sensitive sites you're talking about is the crack that has come up, as I've seen, over the last couple of weeks a fair bit. Now, it has been considered that that's a very important area, it has got high marine live associated with it. As yet we haven't seen -- well, I haven't seen any firm position of actually where that is. So we can definitely include that but we just need to know exactly where it is, so there's no problem with including it but to date we haven't been given that information to specifically include it.

MS McGARRY: I think we've given a pretty good location on the project reef that is being studied --

MR GOVIER: Yes, that's in the monitoring programme already.

MS McGARRY: That's included?

MR GOVIER: Yes, it is.

MS McGARRY: Thank you.

MR GOVIER: So we've got three reefs of Patea and that's already included.

MS McGARRY: That's included. You've talked in paragraph 46 about the monitoring period extending for up to four years; and, again, I'm not sure whether this has changed or whether that's still proposed. And I just wonder what's the driver for the four-year period? How was that determined?

MR GOVIER: As yet that still stands. There has been no discussion I've seen on that to the contrary. So at the moment that still stands at four years post-completion and that says for up to a period of four years. So I guess that will be in discussion with the regulator and the technical review group and I guess as the conditions which are placed in that decision.

That was essentially just to provide four years of monitoring after all the activities have ceased. There will be no more suspended settlement concentration. Hopefully there will be no more re-suspension, things will settle down and then we'll allow to have a time series of data seeing the recovering and monitoring on that. I guess each year of monitoring after completion of mining, the reports will be submitted and reviewed and we've got in there up to four years. So if the environment is deemed

to be back towards baseline then it may be cut short or a decision may be to extent that. I don't know what conditions will be placed on the consent, I suppose, for that.

MS McGARRY: And when you say, "back to baseline" --

MR GOVIER: Well, I guess, back to similar how it was. For example, in an oil and gas project after an exploration well has been drilled, what is placed on them -- it was originally part of the discharge management plans and now it has been incorporated into the marine discharge consents. What they have is a period of up to three years is monitored following post-drilling. So, yes, monitor pre and post and then for a period of three years thereafter or until it returns back to baseline.

As yet, all for three years have been undertaken. We do a number of these post-drill monitoring programmes for the off-shore exploration wells which have been drilled of late, and they've been taken out of the full three-year term. So we've monitored for three years post-completion, it gets some idea of recovery, builds up the information of how it recovers and then that will then be incorporated obviously into future programmes. So, three years has been used and that's been approved by the EPA for the marine consents which are out there at the moment, and grandfathered over to marine discharge consents, so that's where we took the -- I guess, we've gone four years.

MS McGARRY: But you would acknowledge that the activity of drilling a hole for a limited period of time is quite different to this activity?

MR GOVIER: Yes, a different project. A completely different activity, I agree with that --

MS McGARRY: In terms of both scale and in terms of the length of the activity?

MR GOVIER: Yes. But obviously there's going to be a large number of recolonisation monitoring because essentially after the first year your recolonisation monitoring is going to be commencing straight away, so you're going to essentially have a data history of a long period of time through that so you'll build up some idea of it. So these were just proposed. The four years was proposed. We considered that would be sufficient to monitor it. If that needs to be extended that will come out through the condition process, I would imagine.

MS McGARRY: So the basis for it was really just you got an idea from the other marine consents?

MR GOVIER: There's no other standard for an offshore programme such as this.

MS McGARRY: I think you're also proposing to do the bathymetric surveys for four years following, and I just wondered in light of Dr Hume's evidence in terms of the timescale over which those bathymetric changes will occur, whether that four years is sufficient.

[1.20 pm]

MR GOVIER: I guess that's outside my expertise of how things will settle down out there after the sediments have been re-deposited. Again, if it's considered that it needs to be longer after that four years -- well, whether there's processes in place to extend that or not. But given the sediments have gone back, there's going to be no more activity and it's going back to natural environmental conditions, there's no more changes, it's only going to, I guess, gradually decrease in terms of those lumps and hollows out there.

MS McGARRY: In terms of the surrogate of using turbidity as a measure of suspended sediment, I understand why it's desirable to have a surrogate in that it gives you the real time and I understand the background behind it. But in the offshore environment it comes through the evidence that one of the concerns is that turbidity doesn't distinguish between natural things like plankton and so you can get back-down readings that are higher than what is represented of the sediment. Nobody has really addressed that for us, Mr Govier. Is it something that you've put thought into in terms of the monitoring programme?

MR GOVIER: I am aware of it and, I guess, essentially what that means is it's going to be more conservative than not in terms of the readings. So you're going to get a higher reading from the instruments as opposed to a lower reading. So that's why every two weeks we've got water samples as well being taken. So we'll be collecting data every two weeks -- actual physical samples monitored for suspended sediments, and then we've also got the turbidity as well.

I'm not an expert in terms of how these instruments can pick up between plankton and other organisms in the water column as opposed to suspended sediments, but, yes, I see it has been raised.

MS McGARRY: Well, I just raise that as a flag, that I still feel like nobody has addressed that matter, and I think it actually comes up in the evidence of Dr Dearnaley about the problem with particularly the offshore environment, that you're talking about almost zero as a background. And if you start getting figures picking up background plankton it's not going to be conservative, in fact, because the limit will be over and above that background limit. So it's actually going to work in the opposite to that, isn't it, Mr Govier?

MR GOVIER: It will work in the opposite for TTR, but in terms of environmental -- I guess once mining commenced it is over-predicting what is there is what it would be doing.

MS McGARRY: Yes, it's allowing a higher limit, isn't it? If you're saying you're only going to be this much over background and we're measuring the background incorrectly to be this, when it's this. I see that's an issue. But I'll leave that with you, Mr Holm, because it's something we've raised at the beginning of the hearing and we haven't heard anything so I'll just leave that there.

In paragraph 108 of your evidence you've talked there about the monitoring that's linked to the first five years within the application site, and I can't help wondering if the point of it is really about how much you've mined rather than how long it has been, that in five years there may be not a lot of activity due to whatever reason.

MR GOVIER: Yes, that has been replaced -- as you saw my presentation about the operational area, so there will no longer be that placement there. We'll be placing the increased number of sites straight after they've been mined -- that first strip of the nine sites. So previously we had three stations monitored initially, then every year there'd been an additional two more stations added in there to keep moving in behind the mining. But after the expert conferencing it was deemed that this was not the best way to approach it and the addition was to put as many sites in as quickly as possible as we could to start monitoring recolonisation. So that was the reasoning behind six sites being included and then the nine sites coming in behind that. So that paragraph there, that no longer stands.

MS McGARRY: Okay, so it's now linked to the progression of mining rather than a time?

MR GOVIER: Yes.

MS McGARRY: Thank you. And at paragraph 112 of your evidence you talk about monitoring the reef, and I can see why you would do that in terms of being driven by what some of the concerns are. But I just wonder, when I looked at your photos that you referred to again today, that really of what value is this going to be when obviously there's some very significant environmental changes going on anyway, so the ability to give any meaning to that monitoring I would have thought that monitoring was almost zero in terms of cause effect, understanding what's going on.

[1.25 pm]

MR GOVIER: Yes, cause effect, and obviously you'll have seen from the plume data, the modelling data etc, the predictions of increased sand levels from the activity to the inshore region is very low. However, there were a number

of concerns from submitters about the sensitive near-shore environment, and if we're not seen to be monitoring that I don't think that's appropriate. So we're doing proposed monitoring of all those sensitive reefs and essentially it will just be building up a time series of data to the health of the reef. It will be, I guess, in one sense providing more information on the knowledge and the history contributing to the Council's records of what's going on along that shoreline. And I guess the other thing I'd say from experience that I've had with activities offshore in a marine environment, if certain things happen along the shorelines, if the consent is granting and mining is commencing offshore and all of a sudden a huge big sand inundation event comes through, everyone will point the finger at TTR as being the result of why that's happening, not the natural environment.

So if we're not monitoring prior to consent commencing, we don't show that we've got a dataset of that sand moving through those reefs and assessing it in how they recover and change through time before the activity commences -- afterwards it's too late if we go back, if we don't have that data before it goes through.

MS McGARRY: Although you acknowledge that to make any link between --

MR GOVIER: Absolutely --

MS McGARRY: Yes, impossible really --

MR GOVIER: Yes, absolutely. Totally agree.

MS McGARRY: Thank you. In terms of the kaitiakitanga reference group, what's the implication there if tangata whenua just don't want to participate? I'm on paragraph 119 of your evidence where you deal with 118.

MR GOVIER: I guess that will disappointing if they don't participate. It will be certainly good to have that local cultural knowledge to build into the monitoring programmes. We want to monitor the kaimoana. It has been raised as a concern. I've been involved in a number of kaimoana monitoring programmes and having input from local hapū, local iwi groups is certainly advantageous; getting them involved is even better. And I guess the one thing that we've offered through this monitoring programme is to have local iwi and hapū members involved in the actual monitoring, and its essentially going to be upskilling, providing information and essentially growing the community. I've been involved in a number of monitoring programmes taking iwi out onto the reef -- South Taranaki, through Taranaki, and it's really beneficial for both parties. We all learn out of it, and I think everyone grows from that. So it will be very disappointing if that doesn't happen.

I'm hoping that some arrangement or agreement will come in where they are involved because they've obviously got a lot to contribute to a programme such as this, and I believe that we can also offer something back to them and give them some part of involvement -- and essentially they can be involved in the monitoring.

MS McGARRY: And if they don't participate then it's drafted in such a way that the applicant is not non-compliant?

MR GOVIER: Yes.

MS McGARRY: In paragraph 165, which continues over on to page 44, you talk about the IMV and the FPSO being equipped with a video camera. I'm just wondering, is that something that is reviewed? Who reviews it? Is there a requirement?

MR GOVIER: As I understand it, it will be broadcast ashore in real time. So whether it's through -- I'm not sure of the specific details on that but whether it will be viewed through a website. You can go on and log onto the website and you'll be about to have a look out and see what's happening there on the vessel.

MS McGARRY: And that's followed up in conditions, is it? Or not?

MR GOVIER: Yes, I think it is, yes.

MS McGARRY: And does it say that it will be recorded and kept for a certain period of time?

MR GOVIER: You'd have to follow up with Dr Mitchell on that this afternoon.

MS McGARRY: Okay, thank you.

MR GOVIER: I don't have that in front of me, sorry.

MS McGARRY: In terms of paragraph 168 you're talking about the training programme for all TTR personnel.

MR GOVIER: Yes.

MS McGARRY: Presumably that would include training on identification of different marine mammals.

[1.30 pm]

MR GOVIER: Absolutely, and there will be record books and identification guides etc will be on wherever the lookouts are etc on the vessel. So everything will be in place so they've got a full identification guide for that.

MS McGARRY: And at paragraph 193 of your evidence you talked about the review groups being privy to all monitoring results. I'm just wondering, what's the timeframe for that? Is it stipulated in the conditions?

MR GOVIER: I don't have that in front of me, sorry. I couldn't tell. Again, that would be a question for Dr Mitchell. But it would be as soon as possible, but there's no timeframe on that. Obviously different monitoring programmes have different timelines for when the results can be done, whether they're sent off to internal or external labs or whether it's simply just crunching numbers or writing up reports or analysing samples. So each sample can't have the same timeframe applied to them, they do differ.

MS McGARRY: You've talked about having a select group of personnel, paragraph 214, to maintain the bird strike response kits and list the incidental sightings. Will that be a requirement that all people on board the vessel will be trained or will there be one person on board the vessel at all times that's trained in the seabird area?

MR GOVIER: It wouldn't be all people because obviously they've got roles in terms of operating the vessel and the mining activity operations on the vessel. There would be select -- I'm not sure of how many people it will be, that hasn't been decided on, but there will be at least two or three people I assume on every shift that have been trained appropriately and they're able to take on that role. Obviously it needs to be someone that can leave their role that they've got on the vessel -- obviously it can't be the master or something like that. So, yes, it would be selected.

MS McGARRY: And is that contrasted with the marine mammals whether every staff member will be trained in being able to identify a marine mammal if they see one?

MR GOVIER: Again, those details will need to be sorted through the process but every staff member on the vessel, I would assume, would be provided with the resources to be aware of those species. Not all of them are going to be in the role of observer -- that won't be their role on the vessel to obviously record sightings etc. There'll be designated people for that.

MS McGARRY: Right, okay. You talked about the scale of the monitoring proposed -- that it's outside of anything you've seen. Would it be fair to say that the scale of this activity is outside the scale of anything you've seen?

MR GOVIER: Proposed?

MS McGARRY: Scale and duration, I should say?

MR GOVIER: Yes.

MS McGARRY: Yes. The focus of the conditions - and, again, bear with me because I'm struggling to catch up - is very much on suspended sediment concentrations and monitoring metals and metalloids in the water column and sediments. I don't really see any measuring sticks for anything else. You've talked about monitoring sediment deposition, you've talked about going back and monitoring recovery. But there doesn't seem to be any measuring stick or any standard or any limit to try and work towards. Have you got any comment on that?

MR GOVIER: I guess that's fairly hard to measure. A lot of the monitoring which is in place, you can't have limits applied to them. The main effect from the mining operation is going to be your suspended sediments and the potential for metals and obviously if they are controlled it's going to have less of an effect on the down-current systems -- the other marine life associated with that. So if you're controlling the main effect from the mining that's, as I see it, the only limits which can be placed on the activity. In terms of how we'll be assessing it will be assessing through statistical interpretation and for significant change and species -- oh, sorry, not species, composition -- and that's why this pre-commencement monitoring plan is so important to undertake prior to the activity taking place, if it's approved, is to have a robust dataset which can be statistically compared post and prior to an activity. So that's the reason why we've got this two-year monitoring plan and that's why, I guess, we've removed that baseline from it. It's not baseline data, it's gathering a statistically robust set of data which can be compared pre and post the activity commencing.

[1.35 pm]

MS McGARRY: So in terms of the evidence we've heard about the recovery, I mean, we've been told that it will recover over a timescale and different species will recolonise and, yes, it might not be exactly as it was before. But presumably it will have a similar number of species, even if they're not the same species, and a similar abundance of those species if that is a true prediction. But it doesn't seem to be that there's any attempt by the applicant to point anything there. If at year 10 in fact the monitoring shows statistically there is a significant change in the biodiversity and abundance in terms of the recovery of the site, so what? I mean, nothing happens. There's no response, there's no implication to that. You're almost monitoring for monitoring's sake, I would say.

MR GOVIER: Are you talking about in the mining permit area or outside?

MS McGARRY: I'm talking about in the mining permit area but the same could be said for sediment deposition 2 or 3 kilometres downstream that you monitor. You see the significant change in a reef that you're monitoring, let's say the crack or the project site, you pick up a statistically significant change but then the conditions are silent on that. So you monitor, you pick up the change and you carry on. So my question is, where's the response or where is the point where something is deemed significant or not or a response or not?

MR GOVIER: Yes, I guess -- and I can't speak, this will be something you'll have to ask of Dr Mitchell around the conditions, but my understanding of it is that controls are being put in place on the output, the fines, the suspended sediment concentrations etc. So if they're controlled -- if they start getting higher than they should be, which has been predicted to have an effect on the downstream and the reefs and that, then the scale of the project will be assessed. The operational controls will be put in then until they find out what's going on.

MS McGARRY: Although the new conditions now don't even stop, do they? There's no response now. There's no trigger limits on the suspended sediment concentrations.

MR GOVIER: No, it's the fines that are discharged. I don't have them in front of me at the moment, sorry. Again, I haven't --

MS McGARRY: But I'm not missing anything, there are no limits there?

MR GOVIER: The suspended sediment concentration limits, no.

MS McGARRY: No, and there's no limits in terms of deposition and there's no limits in terms of recovery as standard or --

MR GOVIER: In terms of deposition it was considered by the experts that it would be too hard to monitor. So the monitoring programme doesn't monitor for deposition itself in terms of accumulation of deposition of sediments.

MS McGARRY: Thank you.

MR SHAW: Dr Thompson?

MR THOMPSON: In presenting the outcome of some of the joint witness caucusing conversations you referred to re-salinated water. Could you just explain to me where that occurs and to what extent the water is re-salinated?

MR GOVIER: Okay, now I'm not an expert on this and this is probably something for Mr Thompson to answer. But my understanding is they require fresh

water for cleaning the oil and then when it's onloaded to the FPSO, then after it is onloaded and it is cleaned, that re-salinated water needs to be discharged back into the sea.

MR THOMPSON: So you say it's re-salinated as a consequence of cleaning?

MR GOVIER: No, sorry, it goes through a re-salination process --

MR THOMPSON: Oh, it does.

MR GOVIER: -- on board the vessel -- they need fresh water to clean --

MR THOMPSON: Yes, I understand there's fresh water. So it's de-salinated to give you fresh water to clean the output before it goes onto the SFO. You're saying it is then re-salinated before it is discharged?

MR GOVIER: No, it's not re-salinated. As far as I'm aware, sorry, the de-salinated water is discharged.

MR THOMPSON: Oh, you've used the word "re-salinated".

MR GOVIER: Sorry.

MR THOMPSON: So if it is re-salinated it's purely accidental as a consequence of the washing?

MR GOVIER: Yes.

MR THOMPSON: So we are still discharging --

MR GOVIER: Fresh water.

MR THOMPSON: -- fresh water?

MR GOVIER: Yes.

MR THOMPSON: And therefore the concern that some submitters had raised about it being lighter than salt water and coming to the surface is still a valid one?

MR GOVIER: I haven't heard those concerns but, again, you might want to check with Mr Thompson on that exact process. I'm not familiar with that. That's outside my area, sorry.

[1.40 pm]

MR THOMPSON: So change your slide to "de-salinated" then?

MR GOVIER: Yes, please.

MR THOMPSON: Okay, thank you.

MR SHAW: Mr Coates?

MR COATES: Kia ora, Mr Govier.

MR GOVIER: Kia ora.

MR COATES: You talked about the development of the pre-commencement and environmental monitoring plans as being based on the best available information -- and I think you used the words "most robust in New Zealand", and that also included the pre-commencement and environmental monitoring plan as well. When you're doing the pre-commencement environmental monitoring are there any factors which would impact in such a way that they were game-changers? In other words, things you hadn't envisaged?

MR GOVIER: I don't think so, no. Another purpose of this pre-commencement monitoring plan is to test out all the methodologies and the systems that we put in place, so that once mining commences we know everything is going to work in robust. For example, the methodologies to monitor suspended sediment concentration, the telemetry system and all of that. So that's what that two-year period is for as well, is to ensure that everything is working correctly. And if it doesn't, we've got that two-year period to ensure everything is prior to mining commencing. But the methodology which is proposed, it's all very standard. I don't see any fishhooks in what's been proposed and what's not going to work.

MR COATES: So you don't expect any surprises?

MR GOVIER: Not in the pre-commencement monitoring, no.

MR COATES: With the environmental monitoring locations, the location of the sample stations they're on sort of 60 degree transects, but I would have expected there to have been some sample stations in the plume vicinity?

MR GOVIER: They are all in the plume. What we did is we overlaid the plume so we got the 99 percentile plume overlay and the reason of those angles of the transects is where they actually follow the highest deposition of the highest concentrations of the plume.

MR COATES: But they seem to only extend 30 kilometres, is that right?

MR GOVIER: Yes.

MR COATES: And that's the extent to which you think that monitoring is warranted?

MR GOVIER: Yes.

MR COATES: Because the plume extends in the sort of south-easterly --

MR GOVIER: Yes, south-east it goes a lot longer than 20 kilometres, it's slightly longer than that, but that's what has been put in place, yes. By the time the effects from the modelling beyond 20 kilometres are very, very minimal in terms of deposition.

MR COATES: Well, you'll hope they'll be minimal, I guess.

MR GOVIER: Yes.

MR COATES: But wouldn't it be prudent to put a sample station at the extreme ends of the plume?

MR GOVIER: I guess where you start going into there is then you're starting to get into the inshore environment -- whether it's high turbid environment. You'll see on the modelling data that it's a lot more turbid without any mining induced effects in there. So we're trying to just monitor for the mining contributed effects.

MR COATES: Thank you. When you talk about surveillance for marine pests, you talked about algal bloom creating cysts. Can you give me a bit more information about what that comprises, or are you relying on third parties?

[1.45 pm]

MR GOVIER: That recommendation came out of the expert conferencing and, I guess, the term "marine pests" has been defined on the MPI website as well. So those species are included in the MPI website as considered, so I guess we've just included the recommendation. It's only just come in as a result of expert conferencing so I haven't done too much background into that.

MR COATES: Does that under your ambit or is that something that you're giving over to --

MR GOVIER: Yes, I'd prefer to, yes, Dr Forrest on the algal blooms. Is that what you're wanting to ask about those algal bloom species?

MR COATES: I was just wanting to know whether that fell under your monitoring regime?

MR GOVIER: Yes, it will be included within the phytoplankton and zooplankton monitoring, so when the species are identified in those water samples which are collected, or the plankton samples which are collected from the nets, there'll be an awareness for any potential invasive species in there as well.

MR COATES: Thank you, that's all the questions from me.

MR SHAW: Thank you, Mr Govier, I'll just run through very briefly the response submitters' questions; in fact, I think probably the most economical way to deal with this -- have all parties got that material in front of them from the submission? Do people need those read or happy to take them as read? Mr Currie?

MR CURRIE: Happy to take them as read, sir.

MR SHAW: Fine. Excellent. That being the case, are there others? Oh, sorry, Mr Dawson?

MR DAWSON: No, sir, we will take them as read.

MR SHAW: Okay. Then we'll move then to questions from parties which I've just received from Ms Haazen on behalf of Greenpeace and KASM. She begins by asking, "What do you understand to be the essential difference between the first set of conditions and the latest set of conditions?"

MR GOVIER: The latest set of conditions have included all the recommendations which have essentially come through this hearing process, is my understanding. I have skimmed through them but I've been concentrating more on my evidence than these conditions. I've obviously updated to reflect those conditions but the biggest change I see is just the recommendations which have come through this hearing process and expert conferencing.

MR SHAW: Okay. Next is, "Do you agree there is no significant change between baseline conditions and the PCEMP?"

MR GOVIER: Sorry, can you repeat that again?

MR SHAW: "Do you agree there is no significant change between baseline conditions and the PCEMP?" I do hope it's not an acronym causing you difficulty, Mr Govier --

MR GOVIER: No, no, I was just trying to understand the baseline conditions.

MR SHAW: I'm reading as written. Ms Haazen, can you help us here if there are any -- no, it's the pre-commencement environmental monitoring programme and the baseline conditions.

MS HAAZEN: So the reference is just the change from the baseline environment monitoring plan to the pre-commencement environment monitoring plan.

MR GOVIER: Yes. No, the only change is the name.

MR SHAW: Okay.

MR GOVIER: And, sorry, and the inclusions which I have made clear in my presentation today. So the old baseline environmental monitoring programme was which was submitted prior to this hearing commencing --

MR SHAW: In need of an acronym, you change the name.

MR GOVIER: Yes. So now the pre-commencement monitoring plan is essentially the name change, but when you see the new PCEMP it will incorporate the new changes which I've discussed in my evidence, which have been recommended through the expert conferencing. That's the only change.

MR SHAW: "What is meant by pre-commencement? How can the plume be assessed without commencement of mining?" There are two questions in there but unlike the Parliament you are to answer them both.

MR GOVIER: Okay. So, essentially what we're doing is we're undertaking the monitoring, if it's approved, prior to commencement of mining. So that was considered to be the name which would be put towards it to avoid that confusion, so that's the monitoring obviously after the consent process but pre-commencement of mining.

MR SHAW: And "How can the plume be assessed without the commencement of mining?"

[1.50 pm]

MR GOVIER: The intention is not to assess the plume. The intention is to build environmental dataset which is as close to possible as the starting of mining, so that it gives an environmentally robust dataset which can be compared after the mining commences. So you want to have that dataset for comparative purposes as close to the start of activity as possible.

MR SHAW: "You mentioned metal testing and testing of toxicity in mining tailings. How is this carried out without the commencement of mining?"

MR GOVIER: So, some of those will be undertaken once mining commences. So the acid volatile sulphides, which is from the tailing slurry, that's only proposed for the EMMP. That's not part of the pre-commencement monitoring plan. And likewise for the ecotoxicology testing, that is going to be derived -- so the fine sediments, the fine fraction of the de-ored sediments will actually be used from the mining in the MMP. Obviously that can't be done as part of the pre-commencement monitoring so that's why representative samples of the sediment will be taken and then will be processed to extract out that fine sediment through processing in a lab, and then those fine fractions of the sediment will be extracted.

MR THOMPSON: And, finally, "Do you agree that in terms of setting baseline datasets for biodiversity that it is preferable in all consenting processes to have this evidence in advance of a consent hearing?"

MR GOVIER: I answered this in my evidence, and I think there is enough information available to make a decision for the impact -- or not to make a decision, but for the impact assessment. This has also been agreed by all the experts which have been submitted as well. So you will see in appendix 1 of my rebuttal evidence the amount of monitoring which has been undertaken, there is an extensive amount of monitoring undertaken there.

MR SHAW: Ms Haazen or Mr Currie, anything to follow up there?

MR CURRIE: Not, not at this stage, sir.

MR SHAW: Okay. Nothing from you, and Mr Holm? No. Mr Govier, thank you very much.

MR GOVIER: Thank you.

MR SHAW: Mr Clarke, I gather, is our next witness. Good afternoon, Mr Clarke. Mr Clarke, as you see us prodding our iPads it's because we're trying to bring up your original brief. But I wonder if you could begin by introducing yourself, qualifying yourself and, as I say, excuse the fact that we'll be trying to make sure we've got your material and your original brief of evidence in front of us. Mr Clarke.

MR CLARKE: My name is Bruce Patterson Clarke. I held the position of Principal Environmental Consultant with Jacobs New Zealand Limited. I am a Registered Environmental Auditor with the Institute of Environmental Management Assessment and I hold a Science Degree from Victoria University and a Diploma for Public Health Inspectors. I specialise in routinely undertaking environmental and social impact assessments, environmental risk assessments, hazardous substances management

inequality assessments, providing these services to a variety of industrial, commercial and local authority clients, and I've been doing that for the last 30 years.

[1.55 pm]

If you want some further information. The environmental and social impact assessments I'm referring to are large developments usually offshore where environmental and social impact assessments are prepared to meet the requirements of the aquatic principles, the IFC Performance Standards on Environmental and Social Sustainability, and the World Bank BHC Guidelines, and particularly in countries which are developing under the process they called "Non-designated". New Zealand, under that process, is regarded as a designated country and it is therefore meant to have appropriate robust impact assessment processes.

MR SHAW: Is that the totality of what you've got to say to us?

MR CLARKE: Well, I could do a bit more but, again, it's all in my original brief.

MR SHAW: Okay, we'll move then to questions. Dr Thompson?

MR CLARKE: Oh, sorry, in terms of summary. I've just got the summary section I'd like to go through in my original brief.

MR SHAW: I think that would be a good idea.

MR CLARKE: So, the first area I cover off is air quality modelling. On the review of the modelling which we looked at originally, the modelling had been done for a heavy fuel oil with a maximum sulphur content of 4.5 per cent. Subsequently on review of the impact assessment it was noted that the HFO is actually set at 3.5 per cent sulphur content. As a result of that I understand through Mr Shawn Thompson's evidence that the air dispersion modelling was repeated and was redone at a sulphur content of 3.5 per cent. One of the things again noted was there appeared to be a difference in terms of the types of vessels modelled and what was recorded. So the original modelling and incorporated in the repeat modelling it looked at just purely FPSO operations, not a split process between an IMV and the FPSO. So, again, it's just noting that the modelling was done on one vessel, not a couple which could be positioned slightly differently and would give you slightly different plumes.

So these inconsistencies between the reports and inclusion of redundant information made it at the time hard for us to determine what is being assessed, and whether the effects predicted relate to the process described in the IA or were they related to the FPSO, which I gather is

from potentially the previous application. There was also a number of other vessels as part of the mining operations and those also produced sources of combustion gasses and they weren't included in any of the modelling process.

I then move onto commentary about the oil spill trajectory modelling. I've got no comments directly about the modelling itself but the issue relates to how was the critical accident scenarios which was the result for the modelling -- how were they determined? We have been presented with very limited information as to how they were determined and I would have expected that a report on the risk analysis process undertaken to determine the critical accident scenarios to be modelled would have been provided as supporting information to the oil spill trajectory modelling. Such an approach is regarded as standard industry practice in conducting risk assessments for low-frequency high-severity incidents where a number of critical accident scenarios are possible and the consequences of the worst case event or a number of events are assessed.

My next part in the summary relates to the rebuttal of TTR's evidence and in particular, referring to the baseline environmental management plan which is now being called the "Pre-commencement Environmental Management Plan" and in relation to what is appropriate in terms of baseline sampling. So as a start I'd like you draw you to the PowerPoint presentation, please.

[2.00 pm]

So basically we've put up a presentation. This slide shows what is regarded through what I work through the international environmental and social impact assessments is what is typically expected to be undertaken in terms of baseline sampling through the activity that discharges and the impact assessment. So normally baseline sampling where there is uncertainty about the biodiversity of the area at which the impacts are going to occur, the international requirements do state that there should be up to at least two years of monitoring. The main reason for that is to bring into account catching up on migration routes, any seasonal variation, any natural variation, so that can be assessed when the modelling and when the discharges and the impact process is undertaken.

I'll just quote, if I may, from the IFC Corporation's guidance notes on performance standards on environmental and social sustainability:

"Baseline studies should comprise some combination of literature review, stakeholder engagement and consultation, in-field surveys and other relevant assessments. The extensiveness of the baseline will vary

depending on the nature and scale of the project. For sites with potentially significant impacts on natural and critical habitats and ecosystem services, the baseline should include in-field surveys over multiple seasons and conducted by competent professionals and external experts, as necessary."

So my experience is -- and we do a lot of these for mainly thermal power developments, hydro-developments and geothermal developments in various areas with varying biodiversity ranges, but where always as a minimum required -- it's not to do a continuous one year of sampling, but to make sure we've got appropriate surveys conducted so we can actually pick up that seasonal and natural variations. So normally we would try and manage to obtain a year.

So basically that's the first slide which is really showing just what I would expect is a standard baseline process impact assessment process taken through to the consent authority, DMC's decision and then once approved, on to compliance monitoring. So can I have the second slide, please?

So what we've done with this slide is I've overlaid the red boxes, basically bringing into TTR's approach. So the bottom red box is so we know is there has been baseline sampling but some sampling only done once and at one point in time, so we've got a temporal point but we don't actually have an understanding for seasonality or natural variation; and, as such, the question is posed, "Is there sufficient information to adequately understand the receiving environment, its sensitivity and the impacts that the development has on the wider environment?"

There is also some uncertainty regarding silts and muds of the discharge. Again, that has to be factored in in terms of determining the impacts. And then we move through again through the same processes as before to determine the level of impact. The Consent Authority, DMC, reviews the IA, the evidence presented etc. And then we go onto the compliance monitoring. The original BMP had some aims and it was a little bit confusing when you read the aims. This is in appendix 5.1 of the impact assessment, section 1.2. It said:

"Establish a baseline set of environmental monitoring data that identifies natural background levels while taking into account spatial and temporal variation."

And the second bullet point of note was:

"Confirm the current understanding of the seasonality and natural variability of environmental parameters that will be monitored during iron sand extraction activities."

To me, from where I come from, you would know that your baseline sampling would have been done appropriately and sufficient to know what the seasonal variations and natural variability was, and it helps with your impact assessment, it reduces your level of surprise and how you manage that surprise at a later date. As was previously asked by Mr Te Kapa Coates about, if you find something which has occurred and is of significant effect, how are you going to deal with it as part of your monitoring process when the activity is proceeding?

[2.05 pm]

Again, for that - as it's now called - pre-commencement environmental monitoring, the idea of providing a database for further compliance and assessment: I don't have a problem with it. It's generally regarded as good practice, but the key part of that is that the performance standards set, on which the monitoring is being conducted, are set at the impact assessment stage and also confirmed by the consent authority during its deliberations.

So that really covers in a bit more detail my paragraphs (f), (g) and (h). Referring now to paragraph (i), again, it is back to this operational risk review. In that situation, again, Mr Thompson has provided evidence about the operational risk review. I can't remember the number of key risks they identified - I think it was about four or five - but again, how this risk review was undertaken and also the risk assessment of the IMV operations by its naval architect, again, is an important document. We haven't seen that information. Therefore, it's hard to judge that the process has been robust, rigorous and appropriate. I would've expected that such reports would be provided, demonstrating that a good, thorough process has been followed and that the results are appropriate. But, unfortunately, I don't have that information to be able to corroborate or not that process. So, really, I'm saying for that one there needs to be more detailed information to be provided by the applicant on the risk methodology it followed, how hazards were identified, how the level of risk was determined for the operational risk review and the risk assessment for the IMV operations.

My conclusion is for the air quality one, paragraph (k), with the remodelling at 3.5 per cent the impacts are much reduced and are appropriate, although there are still one or two points out in the marine area where the NES ambient air standard is exceeded.

It was also noted in Mr Thompson's evidence that there is an IMO recommendation to reduce the sulphur content to 0.5 per cent sulphur. With good environmental practice, I would have hoped that that will occur. Again, there's a lot of reasons, most of them economic, whether

that will occur or not. But hopefully that will occur. So, if the 0.5 per cent sulphur content does not occur, I would recommend that that be something to be considered as potentially a condition that, as the industry is moving that way, as of 2020 the HFO would contain 0.5 per cent sulphur.

Point (i) about the need to conduct further baseline sampling for a further two years really relates to again - which Mr Govier was saying - is what is the purpose of the now PCEMP? Basically, if there is a sufficient baseline, it shouldn't be there to be just doing baseline again. It's really there to benchmark, to set a set of monitoring standards, which you then can compare when the activity occurs. Again, as I reiterated before, on the risk assessment process, we just haven't been provided with the information to actually make an appropriate decision or view as to whether the risk process has been undertaken appropriately or not.

MR SHAW: That concludes your presentation?

MR CLARKE: Yes. Thank you.

MR SHAW: Mr Coates, any questions?

[2.10 pm]

MR COATES: Kia ora, Mr Clarke. When you're talking about heavy fuel oil, are you really saying that they've done it on a worse case analysis than you think would in fact pertain for the operation?

MR CLARKE: Yes, it's the highest which you -- 3.5 is the highest recommended by IMO, so, yes, it is the worst case for the operation. But that shows there is some degree of potential effects, not onshore but in the vicinity of where the vessels are operating.

MR COATES: Turning to the baseline data, are you saying that two years of baseline data should've been provided prior to making a decision?

MR CLARKE: That's what I'm saying. With good standard practice which I have to deal with for the projects I'm doing offshore, we don't go through a DMC process but the lenders will employ another consultancy and, yes, it's very strong that you have to have your biodiversity and your critical habitat assessments done and, in order to do that, you have to have sufficient duration of baseline sampling. Again, that depends - one year, two years - on the nature of the receiving environment and the level of knowledge on that receiving environment.

MR COATES: The last question is about the hazards identified. They identified five hazards, which were vessel collision, impact from larger vessels, release

of heavy fuel oil, helicopter crash and a loss of anchors and the IMV being swept off-station. Are there are other scenarios that you envisaged should have been included?

MR CLARKE: There will be but, again, it's a very systematic process you work through. You list out your hazards and that. And I haven't spent the time actually listing out and going through that process. That's why I was hoping that type of information would be provided so I could sit there and say, "Yes, I agree with that", "No, I don't". Otherwise, I would have to go and do that process from scratch.

MR COATES: Thank you, Mr Clarke.

MR SHAW: Dr Thompson?

MR THOMPSON: Mr Clarke, in talking to your submission, you referenced a number of sub-letters that I didn't find in my paper. Have we got different documents? You mentioned (k), for instance.

MR CLARKE: Those were the paragraphs in my evidence summary.

MR THOMPSON: In the summary?

MR CLARKE: Yes.

MR THOMPSON: Okay. Let's find that, then.

MR CLARKE: On page 6 is (k).

MR THOMPSON: Got you. Okay, fine. Yes, right. Now, this two-year monitoring programme that you've talked about and I think in answer to Mr Coates's question you said it should be completed before consent is granted.

MR CLARKE: The usual standard practice is that baseline sampling is required and, the word, why it's "baseline" is because that's to quantify what the level of sensitivity is of the receiving environment. Two years could be a minimum. It may be four years. But the bottom line is you need to know. It's a complex regime. You need to know what the seasonal variations are; what the migratory routes are of fish, fish assemblages. There are a lot of other things which, again, technically I'm not competent to talk about but, as an impact assessor, those are one of the important things, as you know, and can quantify your existing environment.

MR THOMPSON: That's what I was getting at. I was getting to the point that you mentioned in your presentation that we needed to capture seasonality.

MR CLARKE: Yes.

MR THOMPSON: You're saying now that could be two to four years to get an adequate handle on seasonality?

MR CLARKE: It varies depending on the situation. But two years for an environment like out in the South Taranaki Bight I would regard as being minimum, but it may be sufficient. But, again, that information is just not there at the moment.

[2.15 pm]

MR THOMPSON: No, it's not there at the moment and the applicant has said that they will do it and then that will form a benchmark. Do you have a problem with that if --

MR CLARKE: I believe that that should be done before because you need that information to assess your impacts. Otherwise, you're assessing your impacts against a set of baseline data which is temporal, so it's a snapshot at that time on that day or those 10 or 12 weeks or 14 weeks, for instance, when the sampling was done. And that will be the conditions on those days; that will be the species that are there. But if you had more data over the seasons, you then can say, "Look how we've got a change here. That impact which we thought was low here is now a moderate to a high level of impact".

MR THOMPSON: If we accept that two years - and you are saying that it is a minimum - but if we accept that two years is a not-unreasonable timeframe for which to measure over that period a baseline picture and that that baseline picture is developed before any mining activity starts, does it matter whether it is done before consent is granted or after consent is granted?

MR CLARKE: I think there's a fundamental issue here because part of the process is setting performance standards or speed limits and you need that baseline data and that sensitivity before the activity commences and before the point consent is granted to set those performance standards.

What my question then would be is, if you are proposing to do baseline sampling after consent is granted, what mechanisms will you have in place if something untoward is found or an impact which has been assessed at a certain level is found to be -- TTR will have the consent, so unless there's a very robust review and relegation conditions saying that if the baseline sampling over the two years finds that there's a very rare and endangered species living in the mining area and we have to protect it, you would argue that they have to relinquish the consent, stop and no

activity starts. That is the question I have. How can that requirement be managed?

I have an example probably for you on that. I was working on the Sellafield low-level nuclear waste repository in the UK in the early 1990s and, there, the ecologists found a very unique, rare and endangered toad as part of the baseline sampling. As a result, the whole design of the low-level nuclear waste repository was completely redesigned, etc. If that baseline sampling was done afterwards, again, that toad, under the original design, would've been wiped out because the original design was going to get rid of the landfill and go through it.

So it's how you deal with something which is totally uncertain and says that the project now is no longer viable because of the level of risk.

MR THOMPSON: So you're saying that the baseline must be identified not only as a measure of impact but to identify what is there and, effectively, that should inform the consent and the formulation of conditions?

MR CLARKE: Yes, correct.

MR THOMPSON: Thank you.

MS McGARRY: Just one, Mr Clarke, and it's really this term "sensitivity of the receiving environment". I know you probably come from an RMA background, too, and in my reading of the EEZ Act I can't find any mention of the term "sensitivity of the receiving environment", which is interesting. But I think what you're actually saying is a description of the existing environment, which would then give you the ability to assess the sensitivity to that?

MR CLARKE: Yes, correct.

MS McGARRY: Yes. Thank you.

MR SHAW: Thank you, Mr Clarke.

MR CLARKE: Thank you.

[2.20 pm]

MR SHAW: Nothing from me. Questions from parties, indeed, and I'm sorry. I have some from Mr Holm or two from Mr Holm. What qualifications or expertise do you have in marine ecology?

MR CLARKE: I have none in marine ecology.

MR SHAW: In your evidence, you indicate in paragraph 11 that you have not read the expert evidence of Dr Cahoon, Dr James, Dr MacDiarmid or Dr Mitchell. Is that correct? In your paragraph 11 you list the documents you say you have read.

MR CLARKE: Yes, correct.

MR SHAW: Yes. Is that an exclusive list or have you also read the --

MR CLARKE: I have been involved in conferencing and so I've read some of that. I have specifically not read Dr Mitchell's evidence.

MR SHAW: But you have read Dr Cahoon and Dr James?

MR CLARKE: No, I have not read theirs.

MR SHAW: Okay. No, that's fine. I think nothing further from you by way of clarification, Mr Holm? Any further questions from Greenpeace or KASM? No? Anything from you, Mr Dawson, in terms of follow-up? No? Okay. Thank you very much, Mr Clarke. I'm sorry. Forest and Bird has returned to the fray, not noticed.

MR P ANDERSON: No questions from Forest and Bird.

MR SHAW: Okay, thank you. Okay, thank you, Mr Clarke.

MR P ANDERSON: (off mic conversation) a concern now about something else, and that's about the timetable, because the timetable has some concerning elements to it, from my perspective, particularly the number of witnesses and the timeframes don't work. If we put those witnesses in that are supposed to go after lunch, that gets us to afternoon tea at quarter past --

MR SHAW: You're talking about today's timetable?

MR P ANDERSON: I am talking about today's timetable.

MR SHAW: Your concern is shared by people here.

MR P ANDERSON: My concern might be greater because I'm on a plane back to Christchurch, as is Ms Sitarz, this evening and we got the latest one we could get, which is about 6.00 pm.

MR SHAW: There are members of this Committee who are going to be on that aircraft as well.

MR P ANDERSON: Excellent.

MR SHAW: I'll trust you. None of you are to speak to each other. But it indicates that we're entirely possessed of the imperative.

MR P ANDERSON: Excellent, sir. Thank you.

MR SHAW: All right. We are now, I think, due to hear Dr Mitchell. I think the circumstances indicate we're going to have to do without afternoon tea, among other things, but there we go. We'll take a five-minute break at some point.

Welcome, Dr Mitchell. If you think that's a look of trepidation on my face, you'd be dead right. I'm just looking at the amount of material we have, Dr Mitchell, and the timetable.

DR MITCHELL: I was going to comment on that, sir.

MR SHAW: Good.

DR MITCHELL: It's lengthy but I will be brief because I've tried to not just have a summary that has bullet points with no context. There's a little story with each one and I'm just going to go through most of that stuff --

MR SHAW: Yes, because I do think that you must appreciate that with the change in conditions, Dr Mitchell, I suspect most people have had insufficient time to truly come to grips with the changes that have been made and, really, I don't know yet the extent to which this statement is going to assist us in coming to grips with something we really have not looked at.

DR MITCHELL: I appreciate that, sir. What I have proposed to do, though, is to give you a high-level summary of the changes that have been made because I noted the comment that you made yesterday about saying the changes seemed to be wholesale. I don't know if they're exactly the words that you used. Most of the changes that have been made are in relation to feedback from the EPA conditions report as to structuring and so forth and there's an awful lot of restructuring that's gone on. But what I am proposing to do, if it's acceptable to the Committee, is to go through and just briefly highlight in two or three slides the key changes that have been made and why.

MR SHAW: Yes, and I think that would be precisely the approach that would work for us. I don't think that that does apply necessarily in the same force in respect of Ms Anderson's evidence, Mr Dawson, which presumably is based on the original set of conditions.

[2.25 pm]

MR DAWSON: Yes, sir, it is based on the precursor conditions and she hasn't had an opportunity to review it in any detail, so I think we'd value a high-level summary as to --

MR SHAW: As well.

MR DAWSON: -- what the changes are and how they differ from the earlier conditions.

MR SHAW: Yes, and I think when we get to Ms Anderson the same sort of approach I think would be appreciated in terms of identifying some of the key principles because these matters are going to be - because of the timetable we've now set ourselves, Mr Barlow - subject to further opportunities for comment by all parties as we go through the process.

MR DAWSON: Yes, sir.

MR SHAW: And I wasn't trying to be unpleasant at all in saying that, I hasten to say, but it is true that I think, as things has developed, we have some of these things now out of sync. I think we have to acknowledge that.

MR DAWSON: Yes, sir. Thank you.

MR SHAW: Okay. Dr Mitchell?

DR MITCHELL: Thank you, sir. Good afternoon to you and to members of the panel. As per the other witnesses, you would like me to just introduce myself and my qualifications?

MR SHAW: Absolutely.

DR MITCHELL: They're set out in my evidence, but I have a Bachelor of Engineering with Honours Degree and a Doctor of Philosophy Degree in Water Resources Engineering, both from the University of Canterbury. I'm a director of Mitchell Daysh Limited, a national planning firm. I've been an environmental and planning consultant for approximately 30 years. I'm a past president of the Resource Management Law Association and a founding national committee member of that organisation. I'm a full member of the New Zealand Planning Institute and a recipient of that organisation's Distinguished Service Award in 2015. I'm a qualified hearings commissioner with a chair's endorsement and I regularly undertake that role. I can confirm that I've read the code of conduct and agree to comply with it.

You'll note that my presentation has page numbers. No, you see it on the screen there. I'm sorry. So I'll just have to remember to use the clicker.

It's my intention to take most of my primary evidence as read. What I do wish to focus on are several matters that have been raised in my rebuttal statement that are still at the heart of matters that the Committee is considering, address several matters that have been raised during the hearing and during witness conferencing and give you an outline of conditions. I've also got a brief part of my presentation at the end which addresses the questions that you posed in your minute of the day before yesterday - or whenever it was - regarding adaptive management and those sorts of things. I'll come to that in due course.

In my rebuttal evidence, which is what I do want to just briefly mention, I want to touch on three things: baseline information, sufficiency of information and adaptive management. The comments I make on adaptive management are of a general nature rather than relating to the specific questions that you raised and I'll address those separately at the end.

In terms of baseline information, the planning witness conferencing has confirmed the general proposition that it's appropriate to differentiate between the information available at the time a consent is granted and that which is available at the time an activity commences. When I prepared my evidence, I was satisfied that there was sufficient information available to reliably assess the effects of the proposal. That opinion's been confirmed - indeed, reinforced - having heard virtually all the proceedings in Wellington and New Plymouth and having read the hearing transcript and the various expert witness conferencing statements.

As Mr Clarke has mentioned, as has Mr Govier, there's been a desire to distinguish between a baseline and the information that's collected once a consent was granted - if it was - and before an activity commences and what was the BEMP is now the pre-commencement environmental monitoring programme. I simply confirm the answer to the questions that were asked of Mr Govier. Other than Mr Govier making the changes that have been referred to in evidence, that's simply a name change. It has no other consequence from that.

It has been suggested by a number of parties, though, that the so-called "baseline" needs to be established before the consent is granted and I've said why I think there's a fundamental distinction between those two things. You obviously need to be satisfied that you have enough information in order to assess the effects reliably and to impose conditions, but a pre-commencement set of monitoring that allows you to compare what's happening before and after the activity commences is a different proposition, in my view.

[2.30 pm]

MR SHAW: Could I ask you one question here? I'm not going to interrupt or I will try not to very much at all.

DR MITCHELL: I'm more than happy to interact as you go.

MR SHAW: If in turning over the stones, as it were, during a pre-commencement environmental monitoring exercise which is undertaken after the DMC signs off on the monitoring, what happens if turning over that stone exposes Mr Patterson's toad?

DR MITCHELL: Pardon me. I think that's a good question and a fair question and I think there's two aspects to my answer. Firstly, the evidence from Dr MacDiarmid, Dr James and Dr Cahoon say that's extremely unlikely. That's the first point. The second point is that - and I'll come to it when I talk about conditions - there is a generic condition requiring that the effects of the proposal are to be in line with those that are presented in the information that is before you. So, if the metaphorical toad was discovered, that would be a fundamental change to the basis on which the application was granted and all the powers and abilities under the Act would then apply. But I make the point --

MR SHAW: Because it would be axiomatic that the conditions, because of the potential impact on the toad - and let's stick with that as the metaphor - hadn't been considered and hadn't been assessed and so it's a different proposal?

DR MITCHELL: Correct. That is different from being -- you would need to be satisfied, though, that the prospect of finding the metaphorical toad was sufficiently low for you to be satisfied that consent could be granted in the first place.

MR SHAW: Yes. Since given the process - and I am going to stop as soon as I say this - assumes that we do not know what we are looking for in some cases, it's pretty difficult, isn't it, to contemplate a likelihood of discovery when we don't know what we're looking for.

DR MITCHELL: I think that's why you have to be satisfied that the information that you have is sufficient for you to make that decision.

MR SHAW: That call.

DR MITCHELL: What I'm reading and seeing from the applicant's evidence, most of which is corroborated by the EPA advisor's independent view, is that the prospect of that happening is remote or is small.

MR SHAW: So this is a case of a known unknown?

DR MITCHELL: I think it's a matter of being able to put the unknowns, where they are unknown, into the appropriate context. I'm going to talk a little bit later on about precautionary principles and uncertainty and so forth.

MR SHAW: I'll stop breaking my undertaking not to interrupt. Away you go.

DR MITCHELL: I'm more than happy, sir, to interact as the things arise. Really, the slide that I'm now showing you is expanding on that point a little bit. I don't consider that the information that's available to you is uncertain or inadequate such that you would need to favour caution. I say that because there's no requirement that absolute certainty is required in order for consent to be granted. I think the proposition is that the information that's available to you needs to be sufficient to enable consent conditions to impose that are both certain and enforceable and that are sufficient to ensure that the environment is appropriately protected. I am satisfied in my analysis that the best available information is available as required by section 61(5), bearing in mind that that is a definition that does not just relate to how much information could theoretically be collected. It's about the practicalities of doing so in terms of time, effort, cost and so forth. That is part of the definition. I do not mean to say that because it's difficult you don't bother doing it. That's not what I'm saying at all. What I am saying is that the approach that I've been involved in during this process has been to rigorously ask the technical experts that are advising the team that I'm a part of whether they are satisfied that there is sufficiency of information to enable that fundamental decision to be made.

I also want to talk very briefly about adaptive management, as I foreshadowed earlier. In my opinion, an adaptive management approach exists only where there's considerable uncertainty around the scale and extent of effects and there's a need to take an experimental approach to a project so that uncertainty around effects can be assessed at an initial scale and the proposal adapted in order to address those effects. The only context that I'm aware of where adaptive management has any legs, as it were, or we have any experience of dealing with it is within the RMA jurisdiction, and I've been involved in a number of those, and I think it's fair to say that I'm very familiar with the cases and, in all the cases I'm aware of, staging in the prospect of shutting down the operation were fundamental to the consents being granted in the first place.

[2.35 pm]

If the approach of setting limits, monitoring the activity against those limits and reviewing the appropriateness of effects on the environment were deemed to be an adaptive management approach under the EEZ

Act, then, in my opinion, it would be extremely unlikely that anything other than a trivial discharge with de minimis effects could ever gain consents under the Act and not taking the approach of allowing to have setting limits, monitoring the activity and so forth would be, I would say, irresponsible and be a great leap backwards in terms of environmental management. And I do note, and I'll give you the section number when I come to it later on, but whilst in relation to marine discharge consents, adaptive management is not to be provided for and that's universal, we all accept that, the approach of setting limits, monitoring the environment and assessing effects after the event, as it were, is specifically included in section 62(2), but I'll confirm that later. So, the prospect of environmental monitoring as an activity is occurring is not, in my view, considered to be adaptive management as defined in the legislation.

I just want to briefly address several matters that are raised during the hearing. One is the question that Commissioner McGarry asked early on was about the RMA planning documents that apply the other side of the EEZ line. Just to briefly touch on where the marine protected areas in this location are, the importance in my view of the various ogier(?) conditions that are proposed and I want to talk briefly about conditions acknowledging the conditions report that Dr Lieffering has prepared, most of which I agree with and most of which are the subject of the changes that have been made to conditions.

So, talking very briefly and very generally about the RMA Coastal Management documents, I should note for the record that they are summarised in the impact assessment document and in detail in appendix 7.4 of that document. I note that they are required to be taken into account. They are not required to be given effect to or to any of the other terminology that exists in the RMA and, for those of us that work in the RMA space, when we look at part 2 of the RMA, we've got matters of national importance that are to be recognised and provided for, the other matters that are to be had particular regard to in the treaty matters which are to be taken into account and that's a hierarchy. All I'm simply saying is that these documents don't have particular importance above and beyond what the effects of the activities actually are. Which is not to say that we are in conflict with them, it's just to put the context around what the relevance of them is. And I've evaluated both the New Zealand Coastal Policy Statement, the Taranaki Regional Policy Statement and the Taranaki Regional Coastal Plan and, in summary, if the proposal were located inside the CMA, rather than outside it, it would be a discretionary activity, as this activity is. The proposal does not impact on any areas or resources that the documents seek to protect and the only "significant" areas identified in the regional documents that are beyond the immediate coastal fringe are the north and south traps and they're a little more than 25 kilometres away from the site.

In my assessment, none of the, if I can call them, "avoid adverse effects policies" in the NZCPS, eg those that have king salmon implications, none of those are triggered. And, in my view, the key matter that arises from the RMA documents is the need to manage environmental in the CMA by imposing appropriate conditions.

Marine Protected Areas, I just wanted to put the information before you so that you can see it. There's a copy of two documents, both of which are very similar. Probably looking at the right-hand one first, they show the marine mammal protection areas that are promoted under the Marine Mammals Protection Act, and there's also some things like set netting bans and so forth that are proposed under the fisheries legislation and you can see that the location of those is remote from this particular activity.

[2.40 pm]

There are the only two Marine Protected Areas, in addition to those that have been undertaken or that have been put in place and they are, again, around the corner from Cape Egmont in the vicinity of New Plymouth.

There are a number of conditions that the applicant has proposed on an ogier basis, they are the tangata whenua conditions, the community relationship conditions, some of the conditions that relate to the Origin Energy matters that you were presented with yesterday, as well as the matter of whether several management plans that are required under different legislation, and I'm thinking particularly of perhaps oil spill contingency planning matters, should be addressed in this consent or not.

In my view, those ogier conditions are important and they record the applicant's commitment to tangata whenua and the local community and the matters raised by various submitters. I acknowledge that the EPA has reservations about those conditions because, as I understand it, they don't want to be responsible for enforcing them, and particularly where they relate to issues between TTR and one particular party. And I think that the EPA view, as it's been expressed to me, is that they would be better off in side agreements.

I simply note that, in my experience, those sorts of conditions are often offered and they're often imposed under consents under different jurisdictions. I would also make the point that this is the only public process that I'm aware of where these matters get aired and it would be one thing to have, for example, an oil spill contingency plan that was the subject of an application made and granted under a non-public process. I think there's considerable advantage in having those key things recorded

in one particular location that the public can have confidence of and access to.

I do acknowledge, though, the fact that there is a debate about whether those conditions could be imposed by you as a Decision-making Committee, but that's why they're ogier conditions and that's simply recording the applicant's willingness to have those matters addressed.

MR SHAW: Well, I think the question, however, of the side agreements that may deal with issues between parties, the extent to which those are dealt with by side agreements as opposed to the imposition of ogier agreements is something we almost by definition do not know, because very often the parties will simply not tell us.

DR MITCHELL: And that's why, especially in relation to the tangata whenua conditions --

MR SHAW: In "us" I'm using in the, not about us particularly, but broadly.

DR MITCHELL: And I accept that, sir. And that's why I have proposed them so that they're transparent and they're there for all to see. So, if there was any doubt in your mind about whether they were conditions that you could impose, the applicant has essentially said, "Well, we're asking you to please do so if you were to grant consent".

MR SHAW: Yes, whether they are imposed in conditions they are certainly enforceable under civil law if they are by way of a side agreement, presumably?

DR MITCHELL: Yes, but my understanding too is, and I think this is well proven at least in the RMA cases, is that where an ogier condition is offered, it becomes a completely enforceable condition as if it were an ordinary condition.

MR SHAW: And an albatross, potentially, for the consenting authority responsible for --

DR MITCHELL: I'll come to that in a little bit when I talk about, for example, the tangata whenua conditions and I don't want to get ahead of myself in getting to there.

MR SHAW: Don't get me wrong, I'm not expressing a view about these things, but simply about obstacles.

DR MITCHELL: I understand. Regarding the tangata whenua conditions, if there were to be a side agreement, it would require engagement, which to date has not occurred and you've heard evidence from a range of people about that, but I think importantly, from my point of view, Mr Young, the planner for Ngāti Ruanui, has confirmed to me, privately and in the witness

conferencing statement, that those conditions should remain. Although he's been at pains to point out that does not represent the position of Ngāti Ruanui because they have their own view, but he is of the view, and it's recorded in the statement, as I've said, that those conditions should remain.

Regarding the Origin conditions, those were tabled yesterday, as I've said, and those conditions are fundamental to addressing their concerns. That's why they've been accepted, irrespective of whether all of them would have able to be imposed by yourselves.

[2.45 pm]

So, talking now, briefly, about conditions. As is pretty self-evident, they've been discussed and refined prior to and since the lodging of the applications. More recently, they've been further refined and improved following the conferencing of the various technical witnesses, receipt of Dr Lieffering's conditions report and from the planner's conferencing. I simply note at that point that the planning conferencing, when it was said that a further set of conditions would be produced in due course, that was endorsed as being appropriate and I also thought it was better, irrespective of the timing, when it was desirable to do that, to get them in front of everybody as quickly as possible, rather than leaving it to the last minute and that was on the assumption that the hearing was going to be closing at the front end of next week. I appreciate that parties haven't had much opportunity to look at them but I also thought it was important to get them out there as quickly as possible.

I just want to briefly explain to you the key changes that I've made. I'm on page 18. Really the fundamental change that's been made is the one that's on the screen at the moment and that is to move away from having receiving environment suspended sediment limits and to propose end of pipe discharge limits. I'd like to spend just a very short amount of time explaining to you what those limits are and why, in my opinion, they're conservative and appropriate.

There are three limits that are being proposed and you can see them on the screen there. There's a fine sediment limit that's to be achieved over a 48-hour period, a 7-day period and a 3-month period. You'll recall from the sediment plume-modelling witnesses, that the fines figure used in Dr Dearnaley's evidence, or the NIWA modelling that Dr Dearnaley refers to, is 1.6 per cent, as compared to 1.8 per cent that NIWA had mentioned and that compares with the 2.25 per cent figure that the expert caucusing when they looked at the "worst-case" were considering. Now, the worst-case modelling is based on 2.25 per cent ultra-fines and the recommendation that's contained in their conferencing statement is that

be allowed over a seven-day period. The limit that's proposed is to allow that figure to be hit but only for a two-day period.

Similarly, the seven-day period is the figure that's based on the Dearnaley evidence, but that's to be limited to a seven-day period, rather than continuously, which was what the basis of his modelling was, or the NIWA modelling was. And the three-month suspended sediment limit, which is the period over which the reporting is to be undertaken, represents 0.9 per cent of ultra-fines, which is 56 per cent of the modelling result that's presented in the impact assessment.

So, when you look at that in totality, this says that over very short periods of time, eg, up to two days at a time, you can discharge the amount of sediment that correlates to the worst-case that has been the subject of further work for a period of no more than seven days, you must hit the long term number that has been used in the NIWA modelling, but that for the balance of the time, and on average over that whole period, the maximum figure is 56 per cent of what's in the original modelling that Dr Dearnaley talked about.

MS McGARRY: Can I just interrupt you there, Dr Mitchell?

DR MITCHELL: Certainly.

MS McGARRY: The conditions refer to 1.8 per cent and your figure says 1.6 per cent, is that ...?

DR MITCHELL: The 1.8 per cent is an in situ figure. That's the figure in the material to be mined. It also correlates to the figure that NIWA had mentioned as being -- you remember the difference between what figure Dr Dearnaley used?

MS McGARRY: Yes.

DR MITCHELL: My understanding is that's a coincidence, rather than the fact that it's actually the same number. But, leaving that aside, the fundamental point is that the 3-month average period is only at 0.9 per cent. That is really the difficulty, if you like, of putting a single number into a model and running it over a certain period of time.

[2.50 pm]

The question is: do you put an average number, a nearly the worst-case number or the very worst-case number? And what this is reflecting is what the actual situation will be, bearing in mind that, theoretically, you could not operate this activity at the worst-case fines concentration for the whole period of the operation because that's just not the nature of

what the resource is. It would happen for a period of time but it couldn't happen over an extended period because that's just not what's there, if I'm making that point very clearly.

So, that's the fundamental change that's been made and I've made it for two reasons. One is because I think that's clear, secondly, it's a matter that Dr Lieffering raised in some detail in his conditions report and, on reflection, and whilst I still believe the original approach was appropriate, I think this is more straightforward and much more simple to understand by everybody. And I don't mean that in a sense of dumbing it down, that's not my point. My point is that that's very clear as to what is allowed and what isn't allowed. It doesn't rely on statistics and it doesn't rely on monitoring beyond the point where the activities happen to allow compliance to be assessed or otherwise.

MR THOMPSON: Dr Mitchell, it does rely on a few things, though, doesn't it? It now relies on that model being accurate because the output is very dependent on the input and the precise working of the model.

DR MITCHELL: Absolutely and I accept it.

MR THOMPSON: To some extent it's shifting the risk from TTR to the environment?

DR MITCHELL: No, I don't accept that and the reason I don't accept that is that because all the sediment monitoring that was proposed previously is still required to be undertaken. Second of all, these numbers are significantly less than those that were in all the modelling that's been presented thus far and my understanding of at least the weight of evidence, if I could put it that way, of the experts about the reliability of the models -- as I understand the conferencing of the sediment people, they all say it's an appropriate model. It's all about what the inputs to that model ought to be rather than whether the right model is being used and whether it's a good tool or not.

MR THOMPSON: Nonetheless, the model was a predictor but, in the end, you are going to be held to account on the outcome of that model?

DR MITCHELL: Yes, and I accept that. This doesn't obviate the need for the monitoring at all the various locations and it doesn't change the fact that the effects that have been predicted in the information before you still needs to be maintained.

What I would simply say in that regard is that, if that was troubling to you, then you could impose those conditions in addition to the other ones and I wouldn't have any particular objection to that.

MR THOMPSON: That's helpful. Thanks.

MS McGARRY: Dr Mitchell, just on this point, because I suspect you're not going to step us through the conditions, so just while we're on these limits, so your new condition 5, (a), (b), (c), (d) and all the parts thereof, are "or", should that be "and"? Presumably you're going to meet all of those?

DR MITCHELL: There's always a debate in planning circles about what "or" means and what "and" means when it's listed in there. I don't mind which it is, the intention is that each of those needs to be complied with. The way the conditions are worded says that, "The activities authorised with this consent do not result in an exceedance of" and, on reflection, I think that "or" is correct because if it said you can't have an exceedance of this one and that one and that one, you'd have to be non-compliant with all three at the same time in order to be out of compliance I would have thought.

And it's because the condition doesn't say, "You shall ensure compliance with", in which case it would be "and", this is saying that it shall not result in an exceedance of, if I'm explaining that clearly.

[2.55 pm]

MS McGARRY: Okay, thank you.

DR MITCHELL: The other changes that I've made are on slide 19, which will be on-screen in front of you, is to amend the overall structure to clearly separate what are operational standards and that's set out in conditions 4 to 21, from the management plan requirements, and that's new condition numbers 39 to 43. I've made some amendments to provide the certainty that Dr Lieffering was seeking in relation to management plan and monitoring plan conditions and there are three of them that are listed on that slide. That's to require the final versions of key management plans and monitoring plans to be generally consistent with currently available drafts, where they're available, to require the management plans to be approved in a technical certification capacity by the EPA and then implemented by the consent holder - I think that last part was more implicit than it was explicit - and to make it clear that no management plan can be relied upon until it's been certified and that includes any changes to a management plan.

Dr Lieffering, as you may recall, said, "Well, what happens if a management plan isn't approved or a change to it isn't approved?" My proposition is that until it has been approved then the management plan doesn't exist and the consent can't be implemented and relied upon.

I've amended the technical review group conditions to make it clear that no third party can be compelled to provide a representative and make it clear how any such refusal would be addressed.

I've added the operator of the Kupe field to the participants in the TRG. As I've mentioned, I've renamed the baseline environmental monitoring plan, which is of no consequence other than by the name and there's the additional monitoring of metals and other matters that Mr Govier has referred you to.

I've amended the post-extraction monitoring requirements to remove the ability to shorten the four-year period and I may not have communicated that to Mr Govier, because he was asked about that, what the criteria might be in order that that period could be shortened. Dr Lieffering has made the same point and said, "What criteria would be used to shorten that period?" and I've said let's just take the uncertainty around that out and say that it will be monitored for four years.

I've added Ngā Rauru and Ngāruahine to the non-exclusive list of parties to be added to the non-exclusive list of parties to be involved in the tangata whenua conditions, and I've referred to them now as tangata whenua conditions to avoid any particular -- not debate, but any potential difficulties with my conditions, that I'm proposing, asserting mana whenua on people, because it's not my job to do so I've just genericised it and referred to tangata whenua.

The kaitiakitanga reference group originally had a four-month period in which to establish itself, in which case, if it didn't, it would fall by the wayside. The concern around that, and I think it's a fair one, is to say, maybe that period is too short and I agree on reflection that it is. I think the suggestion was made, though, that that situation should remain ad infinitum but I'm not sure that that's appropriate either because I think for this process to work --

MR SHAW: There's a big difference between one year and eternity.

DR MITCHELL: I agree but this has to be sorted out, though, immediately upon the consent being granted, if it were to be granted. And I would have thought that in a 12-month period, if the parties cannot agree to do that the prospect of it happening would be very slim indeed. I don't have any particular concern about a particular date, but I don't think it's appropriate to leave it open-ended but I accept totally that there's a judgment call to be made on what an appropriate length was.

I've got quite a lot of experience in these sorts of things in other areas with other folk and my observation would simply be that, where folk are committed to doing these things they can happen quite quickly and if they aren't going to happen that also happens quite quickly as well, but I also totally accept that you don't want to rush things and put people under undue pressure. I've also provided for the technical

review group to be established earlier than was initially proposed.

[3.00 pm]

I've amended the conditions requiring there is an up-to-date plume model to be maintained to make it clear that it's the latest approved version that must be used in all analyses. I think that was implicit before but I've made it explicit. I've included a new condition requiring the removal of all structures at the completion of the mining operation and I've given you the condition number for that. And, as I've said, I've reordered and renumbered everything which has created probably a lot of the confusion because of the amount of red-lining of the documents that you've had in front of you.

There are several conditions that I haven't amended. The first bullet point there is the corollary of the point that I just discussed about the tangata whenua conditions, in particular, the kaitiakitanga reference group. I've not stated what happens if a management plan is not approved simply because I don't think that's necessary. It has to be approved in order for the consent to made to work.

Similarly, I've not made any change to explain what happens if a recommendation of the technical review group is not accepted. Again, I don't think that's necessary. I expect I might get a condition on the next bullet point, "Not included any standards related to acceptable limits of benthic community changes".

I've not specified the experience and qualifications on technical persons undertaking particular tasks. You'll probably recall that a number of the conditions require various things to be undertaken by appropriately experienced and qualified persons. I think that's sufficient. I've not included a bond condition and I've not amended the noise standard for protecting marine mammals.

The questions from the DMC, I've put on the -- I'm sorry, sir?

MR SHAW: I was just going to suggest that there we might leave the planner's view on adaptive management to one side just momentarily and that's an issue of time. We're hearing from counsel, for the most part, on Monday on that and I'd rather try to shoehorn that into that period of time than this afternoon because we do have I think it's Ms Anderson and Mr Currie who can't be here on Monday.

DR MITCHELL: I'm in your hands on that.

MR SHAW: I think what we may do is go to the rest of the conclusions at this point.

DR MITCHELL: That's all I wanted to say, if you want to put that to one side.

MR SHAW: Yes, and then we'll take a five-minute break and staff can consult with various parties to make sure that those who absolutely have to present today can be heard. Does that make sense to everybody? And I suspect that will include Ms Anderson, will it?

MR DAWSON: Sir, Ms Anderson's based here in Wellington, so I haven't spoken to her about her flexibility, but I can do that over the tea break.

MR SHAW: Yes. I'm trying to be nice.

MR DAWSON: No, she is available to speak this afternoon but if you had timetable constraints we might be able to have her appear on Monday.

MR SHAW: Jolly good. That I think's extremely helpful. Thank you, Mr Dawson.

MS HAAZEN: There are a number of questions just sent through to you regarding the evidence that's just been presented. Could those be put to the witness now?

MR SHAW: Yes, but we're going to do it after we've taken a five-minute break. Okay, thank you.

(off mic conversation)

MR SHAW: Don't worry about it now, Gen. Okay.

ADJOURNED [3.04 pm]

RESUMED [3.13 pm]

MR SHAW: Just to be clear about where we are, we've got two hours before people need to go and that's a fair number of people. I just want to do a very quick check about where we are. We have to hear from Dr Lieffering.

I just want to check with Forest and Bird. Ms Sitarz, you have to be heard today, do you? No, that's not the question I asked. That's true for all of us. I wish. Okay. Well, that being the case -- yes? No, I said that before we broke.

MR P ANDERSON: Yes, but if you want me to be here to present the evidence, then I won't be here, so she'll have to do it by herself.

MR SHAW: I get the impression that she's probably quite capable of doing it.

MR P ANDERSON: I don't necessarily have a problem with that but --

MR SHAW: That's cool.

MR P ANDERSON: -- I just think I needed you to know that before --

MR SHAW: Yes, that's courteous and we will do our best to deal with these things, but thank you for that.

MR P ANDERSON: Thank you.

[3.15 pm]

MR SHAW: So, that being the case, I'm going to move to hear Dr Lieffering next after we've finished with the current witness and I've got more questions coming. Then we will hear from Mr Anderson and Mr Currie and try and squeeze Ms Sitarz in, provided we make good progress. Does that seem okay?

MR P ANDERSON: That's fine with me.

MR SHAW: Okay. Dr Mitchell, we'll move to questions from the panel, which will be brief and sparse in number. Ms McGarry?

MS McGARRY: No questions from me.

MR SHAW: Dr Thompson?

MR THOMPSON: Yes, I do have one question, Dr Mitchell. You mentioned that on your rebuttal of evidence baseline information referring to the pre-commencement monitoring that "it's fundamentally important the DMC signs off on that". Looking at the condition, it's purely a signing-off to the effect that it is complete and appropriate.

DR MITCHELL: I think there are two things. The conditions as redrafted also say that the final plans - because they're only available in draft form at the moment - have to be consistent with what's already done. For example - and I'm just hypothesising - if the DMC thought that there should be four or five extra monitoring sites included in addition to what's in the draft at the present point in time, my simple point is that you need to be making that decision because there's a draft document in front of you rather than just leaving that to the officials and what would then be the consent-holder to address that later. So, if you looked at what Mr Govier had said and said, "Whatever happens, we think there should be a monitoring location at point X", then I'm saying that you need to be satisfied that what's in front of you is appropriate. That's all I mean.

MR THOMPSON: Okay. Now I've got a completely different understanding of what you said. So you're saying that before handing it over to the EPA to administer, the DMC needs to be happy with the framework of that plan at this stage?

DR MITCHELL: Yes.

MR THOMPSON: Okay. Then the EPA approval is more saying it is consistent, appropriate and workable. I was looking for the toad and that issue. How does the toad come into play here?

DR MITCHELL: I think it comes into play sequentially. Based on the evidence that you hear - and I accept that you've heard different evidence from different people about what might be there and what might not be - so based on the evidence that you hear, you have to be satisfied that the prospect of finding the toad is sufficiently unlikely and what the consequences would be if you found it, bearing in mind that that's not the evidence from the applicant, nor is it the evidence of the EPA advisors, at least as I read it. But that's not to say any more about it than that. But you have to form a view on whether there is sufficient information available by the time that you close the hearing for you to be satisfied that the consent can be granted and that the effects are appropriate.

My simple proposition was that in the unlikely event - I think it's an unlikely event - that you find the toad, then that falls outside the scope of what the consent is about and that opens up the whole ambit of, "Well, we didn't give you consent to dig the toad up. We gave you consent to mine the seabed as it's been described to us in your application".

MR THOMPSON: Thanks. That'll do. Thanks.

MR SHAW: Mr Coates?

MR COATES: I didn't have a question until you started talking about toads again. But it does strike me that if the toad was something like a marine mammal that we already knew was there but was scared away by noise, what would you do then?

[3.20 pm]

DR MITCHELL: Well, for the answer to that question, there's a whole lot of building blocks and you've got to put one on top of the other to get to that point.

You've got the evidence about where the whales are. You've got evidence about what appropriate noise standards could be and I accept that there's some disagreement technically about what that standard happens to be. The applicant's proposal is clear on the basis that the

noise standard that's been imposed is sufficient to protect those animals. That's what the caucusing from the last hearing was and that's what the Department of Conservation remains satisfied as being correct.

You've got to be satisfied by the end of the hearing, in just the same way that I explained or tried to explain earlier, what you think the effects on those animals will be. If you form the view that the effect on those was some very limited effect given how far away they were and how the noise behaved in the marine environment there, that would be one thing. If you weren't satisfied of that and said that the area was highly special and that the effects were really, really uncertain and potentially very, very large, then you'd come to a different conclusion. But that's primarily a matter of evidence before you grant the --

MR COATES: That would also have to be covered by the pre-commencement monitoring?

DR MITCHELL: Indeed.

MR COATES: Thank you. That's all.

MR SHAW: If you live in Northern Queensland, I think you might well regard a toad as both an impact and a creature, but there we go.

DR MITCHELL: Indeed.

MR SHAW: Okay. Questioning. We'll begin with Mr Anderson's questions:

"Do you, Dr Mitchell, accept that policy 2(a)(i) of the New Zealand Coastal Policy Statement is an 'avoid adverse effects' policy with respect to threatened and at-risk species?"

DR MITCHELL: I haven't got the New Zealand Coastal Policy Statement in front of me.

MR SHAW: I'm sorry, Mr Anderson?

DR MITCHELL: I think it's 12 or 11.

MR P ANDERSON: It's 11, not 2.

MR SHAW: It is, too. Sorry, yes.

DR MITCHELL: Yes, I do.

MR SHAW: "Do you accept that policy 11(a)(ii) of the NZ Coastal Policy Statement is an 'avoid adverse effects' policy with respect to species considered threatened by the IUCN?"

DR MITCHELL: That is my recollection, yes, and it's a policy that is to be taken into account by you.

MR SHAW: "Do you accept that policy 11 requires the avoidance of adverse effects on a range of whale species include Māui dolphins and blue whales?"

DR MITCHELL: I don't think that's the word that the policy uses. I think the policy refers to some attributes that particular organisms are required to have as opposed to mentioning them by name, but I stand to be corrected on that.

MR SHAW: Anything that you want by clarification, Mr Anderson, quickly?

MR P ANDERSON: No.

MR SHAW: No? Okay. From Mr Dawson, the question is:

"With regard to proposed condition 5, can you explain how this will work and in particular part C, which provides for a volume of sediment below 38 microns over various average periods? Is the volume proposed 100 per cent of sediment at less than 38 microns?"

DR MITCHELL: I'm not sure I understand the questions. Could you repeat it, please?

MR SHAW: "In respect of the proposed condition 5, can you explain how this will work and in particular part C, which provides for a volume of sediment with sediment under 38 microns over various averaging periods? Is the volume proposed 100 per cent of sediment at less than 38 microns?"

DR MITCHELL: I'm still not sure I understand the question. Can we --

MR SHAW: I'll ask Mr Dawson. I read the question correctly, I think, didn't I, Mr Dawson?

MR DAWSON: Yes, sir, you did but perhaps I could ask Mr Anderson --

MR SHAW: Go for it. We're not going to waste time.

MR DAWSON: Yes. Sir, can we come back to that one?

MR SHAW: Absolutely. Of course you can. I tell you what. We'll come back to you after we've dealt with the questions from Ms Haazen. Okay?

MR DAWSON: Yes, sir.

[3.25 pm]

MR SHAW: That's probably easiest. On behalf of Greenpeace and KASM, Ms Haazen asks:

"If TTR has conducted sufficient baseline studies, why then did it propose baseline monitoring and why does it now propose what it calls 'pre-commencement monitoring'? Why did it not do that before the application was made?"

DR MITCHELL: I would simply refer the Committee to my evidence and my rebuttal evidence where I address that in some detail. Part of the answer is why the name has been changed. The fundamental point from my point of view is that there is a difference between the information that you need to assess effects and impose conditions if you were to grant consent versus the information that you would need prior to an activity commencing in order to enable before-and-after comparisons. I would simply note that I'm aware of numerous examples of where that same approach is taken.

MR SHAW: The next question from Ms Haazen:

"Do you accept that 8,000 tonnes for week-long periods was not considered in the worst-case scenario?"

DR MITCHELL: That's not my understanding.

MR SHAW: "Do you accept that end-of-pipe limits do not prevent exceedance of models in terms of dispersal, composition and the effects of the plume?"

DR MITCHELL: I understand that the question that Dr Thompson asked me and I said that I think the models are reliable and that's the evidence. It's all about what the inputs are. The inputs are significantly lower than what the model has shown in all the depictions that it's made, whether they're the Dearnaley ones or the worst-case ones, but I've also accepted that if the Committee were concerned about that, I would have no objection and I could see some value in retaining the receiving environment levels as well.

MR SHAW: Okay. Finally from Ms Haazen:

"Do you accept the conditions on marine mammals and seabirds do not address the concerns of experts such as John Cockrem and Leigh Torres on noise, disruption and foraging?"

DR MITCHELL: I understand that the conditions -- that they had presented an alternative or a different view from some of the other experts, so I think the answer is I accept that that's what they say.

MR SHAW: Okay, fine. That seems to follow naturally, yes. Okay. Look, we'll go back to you, Mr Dawson.

MR DAWSON: Sir, just to --

MR SHAW: Mr Dawson, I think it's going to be most economic if you ask the question.

MR DAWSON: Yes, sir. Just give me one second. Sir, look, I was seeking clarity from one of the experts. I don't have it, so perhaps we could go on to the second question that we proposed in the second paragraph.

MR SHAW: "Please explain how these discharge limits" -- or I think more accurately, "Please explain how the discharge limits were determined?" Is that fair enough, Mr Dawson?

MR DAWSON: Yes, sir.

MR SHAW: Yes?

DR MITCHELL: They are derived from three sources, from the measured concentrations taken from the various trials and measurements that had been undertaken; they're based on the original NIWA modelling; they're based on the subsequent caucusing of the sediment plume people. I think I've tried to explain that succinctly in the table where I had the numbers as to what the rationale for them is.

MR SHAW: "Have these proposed limits been independently validated?"

DR MITCHELL: The parameters have been the subject of caucusing or conferencing. The conditions in terms of the durations and so forth, to the best of my knowledge, have not.

MR SHAW: "Do they represent the worst case?" If you think these questions are outside your scope, do say so.

DR MITCHELL: Well, no. I mean, whether they represent the worst case or not isn't really the point, in my view. The point is that they are standards that need to be complied with and, if they're not complied with, that's a whole different issue. They are standards that need to be complied with, they are conditions that are enforceable, and that is the start and the end of it, in my view.

MR SHAW: Okay:

"By imposing discharge limits at 5(c), they address volume and size but not mass of the discharge. Based on the sediment plume modelling, a

discharge limit set as a concentration of milligrams per litre or a mass discharge kilogram per hour could be more appropriate and could be set. Could you comment on that?"

[3.30 pm]

DR MITCHELL: Well, they're the same thing because, if you know what the specific gravity of the material is, which we do, a volume is completely analogous to a weight.

MR SHAW: Mr Dawson, are you on your original question and you can also just see if you've got anything to just follow there in terms of clarification, briefly?

MR DAWSON: Sir, we'll leave the original question and I don't have any other questions.

MR SHAW: Okay, thank you. Thank you very much, Dr Mitchell.

DR MITCHELL: Thank you, sir.

MR SHAW: We will, on a gallop, try and deal with everybody else. There was nothing from you, Mr Holm?

MR HOLM: No, thank you, sir.

MR SHAW: Okay. So it's Dr Lieffering I think we agreed was going to be the next up. Welcome, Dr Lieffering.

Mr Dawson, I think it's pretty clear we're only going to really have the opportunity to hear you and not your colleague. When we look at time now, I think it's getting pretty critical. Sorry, my brain is dead; Mr Anderson. What's more, people knew who I was talking about more than I did, but there we go. Dr Lieffering?

DR LIEFFERING: I'll read this with a couple of minor corrections and additions. Just by way of introduction, my name is Robert Ewout Lieffering. I have a BSc and an MSc Honours both in Earth Sciences from Massey University and a PhD also in Earth Sciences from the University of Waikato. I'm a full member of the New Zealand Planning Institute and an accredited hearings commissioner with a chair endorsement under the Resource Management Act. I currently work for MWH New Zealand Limited as a senior environmental consultant and I also work privately as an independent hearings commissioner under the RMA.

MR SHAW: I think we can probably take everything down to the scope of evidence as being read, Dr Lieffering.

DR LIEFFERING: Can I just add a comment on number 3?

MR SHAW: Yes.

DR LIEFFERING: So I prepared the EPA's key issues report and also the conditions report for the current application, but I'd just like to note here that I don't work for the EPA. My brief from the EPA is relatively narrow in respect of those two reports, so, in that regard, I haven't been engaged to undertake a planning assessment of the application under the EEZ Act.

So my instructions from the EPA in respect of this statement of evidence were (a) to outline my views on the nature of conditions already proposed by TTRL - I'll just qualify that: that's the version, version 2, I think they're called, which was appended to Dr Mitchell's evidence-in-chief and not the current or the revised set - and to outline my views in respect of those conditions in the context of an adaptive management plan, and (b) to outline my views on splitting conditions between marine consent activities and marine discharge consent activities, and you can delete (c). So this statement of evidence does not summarise the key issues report or the conditions report which I previously prepared.

I'll just preface the remaining of my statement in that these are obviously based on the version 2 conditions, which include the suspended sediment concentration, response, and compliance limits. A lot of what I say may not be directly relevant at all to the new conditions, and I suspect you might want my view on some of those new conditions. But it's my understanding that a second conditions report may be commissioned, which will provide a more detailed analysis of those conditions, including the EPA, and my view on those conditions, and any suggested changes or additions.

[3.35 pm]

So whilst there are many conditions being proposed by TTRL covering a range of matters, the main focus of the conditions relate to the monitoring of suspended sediment concentrations, SSCs, and seabed sediment quality concentration of metals at several sensitive sites within the receiving environment. The proposed conditions require operational responses to be implemented should specified response limits be exceeded, and temporary cessation of operations should specified compliance limits be exceeded.

So in particular, under proposed condition 5 if the measured SSC, or seabed sediment quality exceeds a response limit but not a compliance limit, then TTRL would notify the EPA, review the data, including the operational sediment plume model, and collect additional samples to determine whether the exceedance is a result of the mining activities. If

the additional sampling again shows an exceedance of the response limit but not the compliance limit, then TTRL proposes to instigate an operation response to ensure no further exceedances occur. Details of the possible operational responses are listed in section 5.5.3.3 of the IA.

Under proposed condition 6, if the SSC or sediment quality exceeds the compliance limit and the exceedance is shown to be due to the mining activity, then TTRL proposes to cease mining activities. No resumption of mining activities would occur until TTRL has satisfied the EPA that compliance is able to be achieved. So as directed by section 87F(4) of the EEZ Act, marine discharge consents cannot include conditions that, "amount or contribute to an adaptive management approach".

In my opinion, whether or not TTRL's proposed conditions amount to or contribute to an adaptive management approach is dependent on whether the DMC has been provided with sufficient evidence to be certain that compliance with the proposed compliance limits will prevent unacceptable effects occurring, such that it is unnecessary to impose a condition expressly contemplating TTRL permanently ceasing or discontinuing the activities altogether, in the sense of effectively relinquishing its consents, as well as an alternative potential response of the activity continuing with or without amendment. If this is the case, then any changes that TTRL needs to make to its activities to achieve the compliance limit, be they continuing the activities with amendments or temporary cessation, are not, in my opinion, adaptive management. They constitute as operational responses to achieve compliance with specified effects threshold limits.

In my opinion this would be no different to, say, a water permit issued under the RMA which authorises the taking of water from a river that included a minimum-flow condition or a water column dissolved oxygen concentration limit, including monitoring requirements set to ensure unacceptable instream effects do not occur. The permit holder may need to reduce its rate of take as the flows in the river drop or if the DO concentrations approaches the limit set in the conditions, and may also be required to cease taking once flows reach a specified level.

In my view this is not adaptive management, a concept which has been variously described as structure learning by doing, and one which has generally been used where there is a high degree of uncertainty on effects of the proposal. Two compliance limits are proposed by TTRL, one relating to seabed sediment quality and uses the ANZECC ISQG-High concentrations. These, in my opinion, are effects threshold limits, as they are based on ecotoxicological data, and an important issue for the DMC to determine is whether it can have confidence that unacceptable environmental effects will not occur if the concentrations remain below the ISQG-High concentrations. If so, no adaptive management approach

expressly contemplating the activity being permanently discontinued altogether in the case of an exceedance, or the activity continuing with or with amendment, would be required, even if imposing such conditions were an option available to the DMC. The second compliance limit proposed is the 95th percentile SSC limit.

Initial compliance limits have been developed for the seven monitoring sites, and TTRL proposes to verify or update these following the two-year base-line pre-activity monitoring programme. The appropriateness of using a statistically derived SSC compliance limit as an effect threshold limit is outside my area of expertise, but it is an important matter that the DMC needs to test, in my opinion.

[3.40 pm]

The key issues report and the conditions report both include discussion on having conditions that address not only the frequency of elevated SSCs, but also the duration, otherwise there is a risk that the conditions would allow TTRL to discharge up to the SSC response and compliance limit, thereby changing the SSC distribution profile of the receiving waters. TTRL is advised that this matter is dealt with by proposed condition 20(b), which outlines what monitoring is to be undertaken during mining, and it states that the monitoring is ... and I won't read that out. It's straight from the conditions. But the paragraph following clause (b), which states:

"Without limiting the requirement of (b) above, an adverse effect will be deemed to have occurred if the actual 25, 50, 80 and 95 percentile suspended sediment concentration values during any six (6) month period are, for that same period and in the opinion of the EPA, significantly greater than the background (no mining) percentile values predicted by the validated OSPM or the values specified in Schedule 2."

So that clause makes it clear that TTRL's activities may not result in "significant", which is undefined, increase in the SSC at the seven monitoring sites compared with no mining. What constitutes a "significant" increase is not defined in the condition, but it is clear that this condition seeks to limit the allowable increase in SSC at the seven sites over the entire statistical distribution of SSCs, that is, the shape of the SSC distribution curve, sometimes referred to as the bell curve, but the actual shape depends on the skewness of the data, and that it will not be significantly different to what would exist if no mining occurred. This approach is, in my opinion, preferable to a cease operation if the 95th percentile SSC compliance limit is exceeded. And as recommended in the conditions report, condition 20(b) should be more explicitly included as compliance limits.

And I'll just pause here, and I note I was present this morning for Dr Longdill's evidence. And I think he made it very clear that his view of the conditions were that the schedule 2 -- that he envisaged no mining-derived effects at those scheduled two sites, and he said there should be zero impact at the seven sites. So, when it comes to interpreting what "significant" is in terms of that condition 20(b) or any compliance limits derived from that, I would read that as meaning statistically significant difference, rather than an ecologically significant difference.

In my opinion, conditions of consent do not amount to, or contribute to, an adaptive management approach if they include explicit limits or standards, be they receiving environment limits or standards, or discharge limits or standards, which TTRL must meet, but do not specify complete cessation of the activity in the sense of TTRL effectively relinquishing the consent in the case of an exceedance. Further, how TTRL meets the limits or standards does not need to be outlined in the conditions. That is something that can be outlined in a management plan. But the DMC needs to be satisfied that TTRL is able to meet them such that discontinuance condition is unnecessary. Importantly, the DMC needs to ensure that if the specified limits or standards are met that unacceptable effects do not occur. Such conditions, in my opinion, do not amount to or contribute to an adaptive management approach.

In my opinion, conditions which do amount or contribute to an adaptive management approach are those that (a) allow a consent holder to undertake its activity on a small scale, for a short duration, or in stages, typically with hold points, with a trigger relating to circumstances when the activity must permanently be discontinued, effectively cancelling the consent. The activity can only continue or be increased in size or duration following a review of the results of monitoring or research, and there is often a continuous monitoring feedback loop that is used to decide the scale and intensity or permanent cessation of the activity.

Or, (b) conditions that do not include explicit effects-based thresholds, or limits or standards, but instead require these to be developed following the grant of consent, meaning that the consent holder may need to permanently reduce the scale of its activities from those initially authorised by the consent to achieve the developed limits or standards, again with the express possibility of the activity being permanently discontinued.

[3.45 pm]

Or, (c) conditions which include interim effects-based threshold limits or standards that are reviewed/updated following the granting of a consent based on further investigations and research. And, like (b) above, the consent holder may need to permanently reduce the scale of its activity

from those initially authorised by the consent to achieve the developed limits or standards, again with the express possibility of the activity being permanently discontinued.

In the case of TTRL's proposal, it is not seeking to undertake the discharge activities as outlined in (a) and (b) - and the word "and" should be there - and the conditions do not amount to or contribute to an adaptive management approach in that respect.

Nor do TTRL's proposed conditions amount to or contribute to an adaptive management approach as outlined in (b) or (c) above. TTRL is proposing to validate or update the SSC compliance limits following its two-year baseline pre-activity monitoring. This process may result in lower SSC compliance limit concentrations, and response limits for that matter, which may also mean that TTRL may need to amend the scale of the activity to comply with the lower limits. However, as discussed in paragraph 13 above, if the DMC is certain the SSC compliance limit setting process, including the validation and updating, results in specified effects thresholds such that no permanent discontinuance response is expressly provided for in the conditions, then the conditions do not amount to, or contribute to, an adaptive management approach, in my opinion.

Splitting of conditions between marine consent activities and marine discharge consent activities: TTRL has applied for various activities for which marine consents are required under section 20 of the EEZ Act, and also marine discharge consents under - and it should say, "Sections 20(b) and 20(c) of the EEZ Act for various releases of seabed materials and the discharge of de-ored sediment back to the water column from the IMV".

In my opinion, nearly all the activities for which either marine consents or marine discharge consents are being sought are inextricably linked to such a degree that having separate conditions for the marine consent activities and the marine discharge consent activities that are so inextricably linked is impracticable. Further, in my opinion there is no clear benefit in doing so.

I note that three of the four activities for which marine discharge consents are being sought, those under section 20(b)(1) of the EEZ Act, relate to the consequential release of seabed material into the water column, the sea, that will occur as a result of undertaking activities, for which marine consents are also sought, to disturb the seabed, these being the primary activities. The only marine discharge consent activity which is not directly a consequential discharge is the discharge of de-ored sediment back to the water column from the IMV. Whilst the discharge of de-ored sediment is the dominant source of predicted off-site

suspended sediment, the other consequential seabed discharges certainly have the potential to contribute to off-site suspended sediment loads. Therefore, in my opinion it would not be appropriate to have conditions solely on the marine discharge consent for the discharge of de-ored sediment back to the water column.

Separate conditions relating to the long term anchoring of the IMV and the vibrations caused by the IMV and crawler could potentially be imposed, as their potential effects are unrelated to the sediment discharges covered by the marine discharge consents. However, in my opinion there is no clear benefit in doing so.

A further complication of trying to split the conditions up between the marine consents and marine discharge consents involves the correct place for the Augier conditions. These generally relate to addressing specific matters raised by third parties, and would apply equally to the marine consents as they would to the marine discharge consent activities.

In my opinion, in the event that consents are to be granted, the nature of the proposal, in particular the interrelated nature of the activity, lends itself to having a combined set of conditions divided into categories. And I provide a suggested framework under 27(a) through to (j).

[3.50 pm]

MR SHAW: Thank you. Mr Coates.

MR COATES: No questions.

MR SHAW: Thank you. Dr Thompson.

MR THOMPSON: No questions, thanks.

MR SHAW: Ms McGarry.

MS McGARRY: I suspect, taking your comments on board when you made your opening statement, that you're going to appear before us again when you've done another report. So, I feel like we need some time to digest what you've said and the new approach. Obviously you haven't commented on the new approach, but I've just got one, and that's really in terms of your 19(c), which is:

"Include interim effects based threshold limits and standards that are reviewed/updated following the grant of a consent."

I thought that was my understanding of what version 2 did do and would fit in there. Or am I wrong? Have I got the wrong end of the stick?

DR LIEFFERING: No. I guess I'd like to expand on that, is that the TTRL conditions provide a very clear process by which those compliance and response limits are to be updated. So it's the philosophy behind them that the DMC would need to be satisfied with. They're not developing the limits, they're just verifying and updating those limits, and there's quite a -- I think it's in schedule 3, perhaps, there's a quite detailed methodology for that. So the absolute numbers would be updated, but the philosophy behind, "Are they an acceptable effects threshold limit?" needs to be proven, I think. And in my view the 95th percentile number doesn't do that. I think it's the distribution curve of the sediment which is the important thing to look at. So I don't think their conditions in version 2 fall under (c), because they're not going to be doing further ecotoxicological testing on any animals to then review the number. It's just to actually get the right statistical number. That's the difference.

MS McGARRY: Yes. Okay.

DR LIEFFERING: Yes.

MS McGARRY: When I go back and read your conditions report, and it's a while ago now, so I'm going off my memory here, but my understanding of what you were saying was that we've got receiving order standards proposed, but that it would be appropriate to have a discharge standard in conjunction with a receiving order standard. Was that what you were telling us?

DR LIEFFERING: No. I think I said that it's something the DMC should explore. And if the discharge standard was set and the DMC was provided with sufficient evidence to show that that discharge standard would result in acceptable environmental effects to a high degree of certainty, then you could rely on that discharge standard without having -- receiving all the standards, in my view. That doesn't obviate the need to verify effects by doing the receiving order monitoring.

MS McGARRY: So, when the applicant said to us they've changed the conditions on the basis of your conditions report, I didn't see that you were saying to take a discharge-standard approach and to get rid of the receiving water limits. It seems to be a disconnect there. Your response to me just a moment ago seemed to say that you' weren't saying it should be one or other, or in fact you didn't say it had to be both. Your response is really about the level of certainty that we've got. And if we were uncertain, then one of the things we could do is to put both on.

DR LIEFFERING: Correct.

MS McGARRY: Yes.

DR LIEFFERING: But my recommendation is not to use the 95th percentile approach.

MS McGARRY: Yes, I have that. I have that, yes.

DR LIEFFERING: Yes. Yes.

MS McGARRY: Yes.

DR LIEFFERING: But, yes, the answer is yes, a discharge standard and a receiving standard approach. And the latest set does have a receiving standard approach in respect of the metals, the seabed metals that still remains.

[3.55 pm]

MS McGARRY: Yes, but not the --

DR LIEFFERING: Not the SSC. Correct.

MS McGARRY: Yes. And you're drawing our attention to the responses that Dr Longdill made when I was asking questions, that basically he said all the answers were in schedule 3 in terms of controlling effects. That so long as schedule 2 was complied with --

DR LIEFFERING: Yes.

MS McGARRY: -- then that satisfied him. So now that we don't have a schedule 2, you're just highlighting that there's now a gap there?

DR LIEFFERING: If you're not confident that the discharge limit is sufficiently conservative to prove that unacceptable effects won't occur.

MS McGARRY: I've got a lot of --

DR LIEFFERING: But if you're not confident, then the discharge standard and receiving standard approach would be appropriate.

MS McGARRY: Yes. I've got a lot of questions I'd like to ask you, but I suspect they're going to come after you've done either another conditions report, or at least everybody's had the chance to fully digest the revision and what it means. So, thank you, Dr Lieffering.

MR SHAW: Any questions from other parties? Mr Holm? Mr Currie? Mr Anderson? Mr Lawson? No? From Mr Anderson on behalf of Forest and Bird:

"Do you accept that an operational response involves changes to the operation to address some environmental effects?"

Or, "Some environmental effect?"

DR LIEFFERING: Can you read the question again? Just so --

MR SHAW:

"Do you accept that an operational response involves changes to the operation to address some environmental effect?"

DR LIEFFERING: If it's an operational response to comply with an effects-based compliance limit, yes.

MR SHAW:

"Do you agree that the compliance limits that provide these shall not be adverse effects at a population level --"

And here we're talking here about --

MR P ANDERSON: The whales and the birds.

MR SHAW: The whales and the birds. Okay. "Is not an 'explicit limit or standard'?" Do you want me to read that again?

DR LIEFFERING: Yes, please.

MR SHAW:

"Do you agree that the compliance limits that provide these shall not be adverse effects at a population level [that's in respect of mammals and birds] is not an 'explicit limit or standard'?"

MR P ANDERSON: Sir, I think you've read the "these" when it should be a "that". "Do the conditions provide that", and you read "that" as "these".

MR SHAW: I did indeed.

MR P ANDERSON: That's my writing. Hand up, that's my handwriting, that's the problem.

MR SHAW: You should've studied medicine. "Do you agree that the compliance limits that provide ..." these?

MR P ANDERSON: "Provide for no adverse effect at a population level ..."

MR SHAW: You ask the question, because we're now on something that's quite different from what -- well, not quite different, but different from what's in front of me.

MR P ANDERSON: The microphone. Do you agree that the conditions that provide there shall not be an adverse effect at a population level with respect to seabirds and whales are explicit limits and standards?

DR LIEFFERING: Absolutely. They say "no effect".

MR SHAW: Okay.

MR P ANDERSON: Question answered.

MR SHAW: Thank you, and my apologies for my inability to decipher better writing than my own. All right. Thank you very much, Dr Lieffering. Anything else from anybody else? I'm sorry, I should've asked. Mr Currie? Ms Haazen? No? Okay. Then we move to hear from counsel in respect of adaptive management. And we're clearly not going to have time, Mr. Anderson, for your colleague.

MR P ANDERSON: Well, I haven't discussed this with my friends in front of me, but I understand that at least Ms Haazen, maybe Mr Currie, might be here on Monday. So it would -- Ms Haazen has indicated she will. Mr Currie's shaking his head. But Ms Haazen - she'll need to confirm that she's able to do this - can probably call. Ms Sitarz is arranging flights to come up on Monday with an expectation that we might be heard early in the afternoon.

MR SHAW: We are crossing our fingers, but again, Monday is looking pretty grubby as well.

[4.00 pm]

MR P ANDERSON: Well, we're just trying to arrange the time that she can be here in terms of when the flights were available.

MR SHAW: Yes. Look, I think discuss that with staff who are responsible for people for the scheduling.

MR P ANDERSON: So to answer your question, yes, we're planning on Ms Sitarz being here on Monday.

MR SHAW: Ms Sitarz being here on -- I'm getting whispers in my ear. Talk to the staff about the scheduling issue, if you would.

MR P ANDERSON: I will.

MR SHAW: Thank you. Okay. It's a toss of the coin which is answered.

MR DAWSON: Sir, sorry to interrupt you again.

MR SHAW: Yes.

MR DAWSON: Do I take it then that Ms Anderson will not be giving evidence here today, this afternoon?

MR SHAW: That's absolutely right.

MR DAWSON: Thank you, sir.

MR SHAW: Yes. You indicated, I thought, that because she lived here we'd probably be safe in scheduling her some other time.

MR DAWSON: No, that is appropriate, sir.

MR SHAW: Yes.

MR DAWSON: I just wanted to get some clarity on that.

MR SHAW: Yes.

MR DAWSON: And if I could be excused within the next ten minutes to catch a plane.

MR SHAW: Yes. Well, I think you'll be the first in a parade.

MR DAWSON: (overspeaking). Thank you, sir.

MR SHAW: Okay. And, look, thank you, Ms Anderson, for your co-operation in this. And generally my apologies to everybody, but it is inevitable at this stage of things that we are trying to put quarts into pint bottles when it comes to the allocation of time. Anyway, Mr Anderson, you're going to be heard first for the simple reason that you're listed first. So over to you. You don't need to stand.

(off mic conversation)

MR SHAW: It's easily the best thing. Say nothing, it doesn't matter then. No, no, no, no, I want you to sit down. Yes. Don't worry, I think begin. We can catch up. Away you go.

MR P ANDERSON: Sit down?

MR SHAW: Yes, absolutely. No, counsel, he can address it from where he is.

MR P ANDERSON: I hope that the version I've given everyone else has got page 1 on it, though it doesn't appear to have. Well, page 1 is missing from the version of the document I've circulated, so I'll just --

MR SHAW: What we have got is page 1, which is the title page, "Adaptive management statement on behalf of Royal Forest and Bird".

MR P ANDERSON: Yes. So I've got a problem with it. We've got a --

MALE SPEAKER: We only have odd pages.

MR P ANDERSON: We've got a problem with the printing, because (overspeaking)

MR SHAW: Only odds. So we have -- oh.

MR P ANDERSON: That's okay.

MR SHAW: No, it's not.

(off mic conversation)

MR P ANDERSON: Yes. No, it's only got -- it's printed wrong. It's only printed odd pages.

MR SHAW: I know. That's what I just said.

MR P ANDERSON: Okay. So ...

MR SHAW: Don't you love pressure?

FEMALE SPEAKER: (overspeaking) an electronic copy, and we'll whip them off.

MR P ANDERSON: I do have an -- maybe my friend Mr Currie could go first, and then I could --

MR SHAW: There we are. What a jolly good idea. Mr Currie, over to you.

FEMALE SPEAKER: (overspeaking) and we'll print them.

MR P ANDERSON: Thanks very much.

MR SHAW: Look, the wheels have already fallen off. We will go to Mr Currie, hear him, then get things sorted. Mr Currie, over to you.

MR CURRIE: Thank you, sir. You should have copies of mine, hopefully all of them.

(off mic conversation)

MR CURRIE: Thank you.

MR SHAW: We will have them shortly.

MR CURRIE: Yes. Thank you, sir.

MR SHAW: I think do start.

MR CURRIE: I'm not proposing, sir, to go through our memorandum of 10 March, because I explain why in my memorandum of 17 March, but I'm more than happy to answer questions on it, sir. So, I'll just go to page 2, heading, "Adaptive management". And I say:

"We observed in our adaptive management submissions of 10 March that the bright line has to be, 'any other approach that allows an activity to be undertaken so that its effects can be assessed and the activity discontinued, or continued with or without amendment, on the basis of those effects' is prohibited. As we concluded in paragraph 10, that --"

Or that is a bright line, sir. I won't repeat that. It's duplicated. This is drawn from sections 63 and 64, which I've just replicated, but I won't read, sir. So moving to paragraph 3, and here I am speculating, because we haven't had the benefit of the applicant's submissions on Monday, but it appears from the applicant's memorandum of 15 March this position is accepted. They have, it seems, attempted to remove all adaptive management provisions, so we will move forward on this basis. We do submit that it is highly regrettable that it is at the late stage, what was to be the very end of the hearing - and I have to say, I flew to present closing submissions on this, sir - that this position was adopted. Much time put into the evidence and the questions and approach of the DMC on conditions that now, inevitably in our submission, have been discarded, have been wasted.

[4.05 pm]

The end result is that the applicant, in essence, is now submitting or must submit that all the deleted adaptive management provisions are now, and were always, unnecessary, and that the baseline is complete. That is clear as the word "baseline" has been changed to "pre-commencement", and we've had some discussion about that today. That is, and cannot be, the case.

Now, I've noted that Mr Holm in his opening submissions said that -- I'll read it.

"While some submitters still maintain that not enough has been done and that the baseline monitoring proposed should have been undertaken pre-

lodgement, TTR disagrees. The purpose of a baseline environmental monitoring plan is not to establish the existing environment or the level of predicted effects. That work has been done. Instead, the purpose of such monitoring is to establish proper baseline data at particular sites, against which effects will be measured. In other words, the monitoring is not being used to establish these levels but to ground-truth them. While more monitoring can always be done, the key issue is whether there is adequate information in order to be able to accurately predict the likely effects. The expert evidence of TTR confirms that there is adequate information to make an informed assessment about potential effects. Accordingly, in our submission, there is no uncertainty, there is no inadequacy, in the information before the DMC."

In our strong submission, this is not the case. Whether it is birds, marine mammals, the plume, benthic or ecotoxicology, the evidence has shown that there is uncertainty and there is inadequacy. That is again shown by the fact that the revised conditions now call the monitoring "pre-commencement" instead of "baseline" environmental monitoring. The change is an implicit acknowledgement that the baseline cannot be established after the consent is issued. It implies that it has already been established. But it also shows clearly that the monitoring is purporting to establish data, the baseline, which should have been established before the application was made.

Condition 22 states the purpose of which is to:

"(a) Establish a [and they've crossed out 'baseline'] set of environmental data that identifies natural background levels while taking into account spatial and temporal variation."

Changing its name does not change its character. The baseline was not established which, is why condition 22 is there.

In relation to the size, composition, or effects of the plume, if the uncertainty means that the information available is inadequate or uncertain the EPA must favour caution and environmental protection and refuse the consent, consistent with section 64(2)(c), as adaptive management is not available. Granting consent on the basis of ongoing monitoring, which is exactly the approach of the currently proposed conditions, is simply not an option available to the DMC. What the amended conditions have done is remove the mechanism for addressing uncertainty without reducing the uncertainty. It speaks for itself that what is left is uncertainty.

The fact that the PCEMP will be developed over two years before the commencement of any sand mining shows that it is purporting to provide the baseline data, though that term has been deleted, that this DMC

should have had. The applicant has, it seems, abandoned the adaptive management approach, but is trying to dress up the new conditions as non-adaptive management. The purposes in condition 22 should have been done before the application, and that reads, "(a) Establish a" -- well, we've already just read that, sir. This should've been done.

"(b) Confirm the current understanding of the seasonality and natural variability of environmental parameters that will be monitored during iron sand extraction activities."

This should've been done.

"(c) Provide data to validate the background data used in the operational sediment plume model, which predicts the sediment transportation processes in the South Taranaki Bight."

And this should've been done. As a matter of law, the consent cannot be issued in the absence of information and the information supplied later. That is, of course, the adaptive management approach, which is not available here, unless the activity is to be concluded or altered on the basis of the information. To remove the latter is, frankly, disingenuous. It is adaptive management light. But in any case it seems the new condition would amount to adaptive management in any case.

The EMMP, which would follow the PCMP, can be amended at any time. Condition 29, which makes it:

"Any other approach which allows an activity to be undertaken so that its effects can be assessed and the activity discontinued, or continued with or without amendment, on the basis of those effects."

[4.10 pm]

To name but two examples, it must, in condition 28, "(d) Identify the limits contained in the ISQG-High values", limits which may be changed, and:

"(g) Identify the operational responses to be undertaken if unanticipated adverse effects are identified."

These amount to or contribute to an adaptive management response. Similarly, the condition 39 Seabird Effects Mitigation and Management Plan, SEMMP, contains adaptive management provisions in:

"Identify responses/actions to be undertaken by the consent holder if the indicators ... are reached."

And:

"Outline any monitoring requirements for bird strike due to vessel lighting and, where necessary, provide for procedures to alter vessel lighting and vessel operations to reduce the incidence of bird strike."

The marine mammal condition 17 does this as well as it contains:

"(m) Any other relevant operational response in relation to marine mammals that has been approved by the EPA."

As does condition 40 in its provision for amendments to the MMMP. As to the question, "What is the adaptive management approach?" the Supreme Court also, I note, referred to the IUCN Guidelines, which they summarised as:

"The IUCN approved a set of guidelines on the application of the precautionary principle. These included a guideline on using an adaptive management approach, which it is said should be used unless strict prohibitions are required. Any such approach should include the following core elements: (a) monitoring of impacts of management or decisions based on agreed indicators; (b) promoting research, to reduce key uncertainties; (c) ensuring periodic evaluation of the outcomes of implementation, drawing of lessons and review and adjustment, as necessary, of the measures or decisions adopted; and (d) establishing an efficient and effective compliance system."

These core elements are seen in the March 17 conditions, particularly monitoring of impacts based on agreed indicators, periodic evaluation of the outcomes of implementation, and establishing a compliance system. This is what the applicant is trying to do, whether called "pre-commencement" or "baseline". It is the same thing with a different name.

But there is a more fundamental objection. It is clear from section 61(3) and from "Sustain our sounds" that if favouring caution and environmental protection means that an activity is likely to be refused, the EPA must first consider whether taking an adaptive management approach would allow the activity to be undertaken. And the Supreme Court said at paragraph 125:

"As to the threshold question of whether an adaptive management regime can even be considered, there must be an adequate evidential foundation to have reasonable assurance that the adaptive management approach will achieve its goals of sufficiently reducing uncertainty and adequately managing any remaining risk. The threshold question is an important step and must always be considered."

And the Supreme Court held at 129 that -- and we've read this before:

"The overall question is whether any adaptive management regime can be considered consistent with a precautionary approach."

And:

"The secondary question of whether the precautionary approach requires an activity to be prohibited until further information is available, rather than an adaptive management or other approach, will depend on an assessment of a combination of factors."

And they said at 133:

"The vital part of the test is contained within section 129(d) above. This part of the test deals with the risk and uncertainty and the ability of an adaptive management regime to deal with that risk and uncertainty."

And I'm just noting paragraph (d) reads:

"The extent to which an adaptive management approach will sufficiently diminish the risk and the uncertainty."

This makes the result, in our submission, inevitable. There is uncertainty. Adaptive management is not available to cure the uncertainty and so the activity should be prohibited. Consent should not be granted until further information is available.

The applicant has brought this upon themselves. They were put on notice by the first DMC, yet they did not undertake benthic studies. The already inadequate benthic studies done for the first application were not part of the evidence here and so they cannot be relied upon. They did not undertake marine mammal studies. They did not undertake ambient noise tests. They did not submit models of noise profiles, complete with frequencies. They could have done these things, but they did not. They relied almost entirely on the HR Wallingford modelling, but that modelling, even if 100 per cent accurate, cannot cure the above uncertainties.

They were put on notice. We observed in our opening submissions that the first DMC said that comprehensive and longer-term baseline studies of the presence of marine mammals would have assisted them and the absence of the information left them uncertain as to the significance of the proposed mining area and the wider area of the STB affected by the mining operation to citations. More generally, the first DMC were not convinced there is sufficient baseline understanding on which to base the

environmental performance objectives as the basis of the overall adaptive management approach and to be able to meet the purpose of the Act.

There were uncertainties in relation to the plume effects on the benthic environment and the potential for the plume to impact on the rocky reef environments down current from the mining area and on biogenic habitats adjacent to the mining area. On economics, there was a lack of clarity about the extent of economic benefit to New Zealand outside of royalties and taxes and the economic value of the adverse effects.

[4.15 pm]

Finally, sir, I would just observe that the evidence of the last witness appeared to mirror the legal advice of EPA counsel, so I would just draw your attention to our memorandum of 10 March. We went straight to the point in paragraph 5 to the conclusion expressed by counsel for EPA and his advice was that:

"Adopting an adaptive management approach would mean allowing an activity to commence on a small scale or for a short period or in stages otherwise contemplated by section 64(4), with its effects monitored and where a possible condition outcome is the activity being discontinued on the basis of the observed effects."

We went on to say in this paragraph 6 of our 10 March submission:

"It is, in our submission, clear this conclusion cannot be correct, because it ignored the second part of paragraph (b), 'Any other approach which allows an activity to be undertaken so that its effects can be assessed and the activity discontinued or continued with or without amendment on the basis of those effects.'"

So we go on to explain in further detail, sir, but really, in my submission, paragraph 6 is a complete answer to the conclusion of EPA counsel, with all due respect. In my submission, it cannot be right. Thank you.

MR SHAW: I think there will be one or two questions at least in terms of clarification. Quite obviously all of the submissions we receive on this matter are going to be considered at some length, I expect, but we will see whether there is anything that we need to ask you at the moment. Ms McGarry, Dr Thompson?

MR THOMPSON: No questions, thanks.

MR SHAW: Mr Coates.

MR COATES: A very interesting submission, but at the moment I need to ponder it and ask questions later.

MR CURRIE: Understood. Ms Haazen will be here to answer questions later as well, so thank you.

MR SHAW: I'm going to save mine for later, because I think I do want to reflect also on what we've seen here.

MR CURRIE: Understood, sir.

MR SHAW: And in the context, I think also of what Dr Lieffering had to say to us and what Dr Mitchell had to say to us earlier. I think we've got a lot of thinking to do, but thank you very much, Mr Currie.

MR CURRIE: Understood, sir. On a personal basis, I won't be available until late April, but my friend, Ms Haazen, will be here and I will be available towards the end of the newly re-timetabled process. Thank you.

MR SHAW: This document that we got, Mr Currie, the purpose of that, from our point of view? Or is this not part of your ... it's just for reference, is it?

MR CURRIE: Sorry, in case there were questions, sir, I thought it would be useful if everybody had them.

MR SHAW: Okay. No, no, fine, just --

MR COATES: Because I heard comments that they hadn't read them, so that was all.

MR SHAW: Okay, thank you. Okay, thank you very much.

Ms Haazen, did you want to say anything that your colleague may have overlooked?

MS HAAZEN: No, thank you.

MR SHAW: No, that's comforting, I'm sure, to him. Okay, Mr Anderson.

MR P ANDERSON: I'm still being technologically challenged.

MR SHAW: Well, I'll tell you what, we will take a technologically-challenged break for a few moments, but it looks like we'll able to make it.

ADJOURNED **[4.19 pm]**

RESUMED **[4.26 pm]**

MR SHAW: Has everybody got copies now? We're set to go. Mr Anderson.

MR P ANDERSON: Thank you, sir. I apologise for the technological difficulties, but we're good to go now.

I'll go through these submissions, but I'll first make a couple of preliminary comments. I don't propose to deal with the issue in the 10 March memorandum, the fundamental difference between Greenpeace, KASM and Forest and Bird on one side, which is that adaptive management concludes continuing with or without amendment, as opposed to the EPA and Crown position, which appears to be adaptive management only applies if you discontinue. That's a matter that I think the submissions speak for themselves and that the DMC has to make this --

MR SHAW: Mr Anderson, could I just ask you to move the mic so that you're speaking directly into it?

MR P ANDERSON: Is that better?

MR SHAW: Yes, much better, thank you.

MR P ANDERSON: I'm not going to address that particular issue further, because I think you've got all the information you need to make a decision on that. What I do in these submissions is I set out the position on the basis that the submissions filed are accepted. If they are not and you agree with the position put forward by EPA and the Crown, then there is no adaptive management in the revised conditions, so that's the result of that.

What I say the question is that you have to answer in determining the question of adaptive management or otherwise is do the conditions amount or contribute to an approach which allows the seabed mining to be undertaken so that its effects can be assessed and the activity discontinued or continued with or without amendment on the basis of those effects? I've broken that down into the bits that contribute to that questions. The reference to "amount" or "contribute to" come from section 63, which says:

"The conditions the EPA may impose include, but are not limited to, conditions that together amount or contribute to an adaptive management approach. Section 87(4) prohibits conditions under section 62(2)(b)."

The adaptive management approach, the key here is section 64(2)(2), which refers to:

"Any approach that allows an activity to be undertaken so that its effect can be assessed and the activity discontinued or continued with or without amendment on the basis of those effects."

The way to distinguish from adaptive management and non-adaptive management conditions is that adaptive management conditions provide for an approach that provides an assessment of the effects, usually through monitoring and amendment on the basis of the assessment of the effects. This can be compared to non-adaptive management conditions, which would typically provide for setting of compliance limits and monitoring to assess compliance with those limits. Ms Sitarz provides some greater detail on that in her presentation, which you'll just have to accept that the order is not quite right.

It is submitted that monitoring with or without more does not amount to adaptive management. The key is the assessment of effects used as the basis for discontinuing or allowing an activity to continue with or without amendment. That assessment is provided for on conditions in adaptive management. Similarly, review conditions without more do not amount to adaptive management.

[4.30 pm]

The assessment of whether the activity can continue with or without amendment is not based on an assessment provided by the conditions, but by the review, which is a separate consenting process.

So having put forward those propositions, I now turn to look at some of the conditions which I consider amount to adaptive management and I think that in the memorandum of 10 March, I set out conditions 5, 6, 10 and 11 as amounting or contributing to an adaptive management approach. Now, we've had a bit of a jiggle around with the conditions and so 5 and 6 I think are no longer adaptive management conditions, but I think I've referred to condition 27 there, which is the provision which provides for the monitoring the EMMP. In my submission, the remaining elements of that condition which contribute or amount to an adaptive management approach, and in particular I notice condition (g), which refers to:

"Operational responses to be undertaken, unanticipated adverse effects are identified."

Now, in my submission, operational responses, when a condition refers to an operational response, that fits within the definition of adaptive management. Adaptive management includes - if we're right - allowing the activity to continue with or without amendment. An operational response is a response which involves the activity being undertaken in a

different way in response to some environmental effect, in this case an unanticipated one. My submission is that (g) contributes to an adaptive management approach for those reasons.

I've moved on to the seabird conditions. Now, this has been split, so condition 16 provides for some general principles around seabirds, but condition 39 includes a management plan process. As part of that management plan process, (c) and (d), which I've bolded over the page:

"Identify the responses/actions to be undertaken by the consent holder if the indicators in (b) are reached."

Then (d) says:

"Outline any monitoring requirements for bird strike to vessel lighting and where necessary, provide for procedures to alter vessel lighting and vessel operations to reduce the incidence of bird strike."

Now, in my submission, those words plainly provide for the activity to be continued with or without amendment depending on the outcome of the assessment of effects which occurs as part of the conditions. Condition (a) refers to how you're going to achieve compliance with the somewhat nebulous limits in condition 16. You've set some indicators and if you breach those indicators, you amend the operation to address those effects. In my submission, that's plainly adaptive management and those provisions, they contravene the prohibition of section 87(f)(4).

I have set out the marine mammal condition there, which has now been split into 17 and 40. We've got the same general structure of those conditions. Section 17 talks about some kind of broad -- and we heard about whether they're useful compliance limits, if that's even what they are, and some actions that have been undertaken. Now, if we go down to (m):

"Any other relevant operational response in relationship to marine mammals that has been approved by the EPA."

Again, there is plainly an anticipation that the activity may need to be amended in order to address any adverse effects on marine mammals. In my submission, that is plainly continuing the activity with or without amendment.

So for those reasons, my submissions are that conditions 16, 17, 27, 28, 29, 39 and 40 contravene section 87(4). They contribute to an approach which allows the seabed mining to be undertaken so its effects can be assessed and the mining discontinued or continued with or without amendment on the basis of those effects.

That is my adaptive management statement.

[4.35 pm]

MR SHAW: I'm almost tempted to ask a question as to whether or not changing lightbulbs amounts to adaptive management, but I'm not going to quite go there.

MR P ANDERSON: I can answer that question, of course.

MR SHAW: Well, there we go. Away you go.

MR P ANDERSON: Changing lightbulbs slightly underestimates what we are talking about, but if you are talking about the seabird strike issue itself --

MR SHAW: I am.

MR P ANDERSON: -- what you've got is you've got a whole range of different lights which might be attracting these birds. If you've got a whole lot of issues with bird strike and you go and do some research and it says, "Well, actually, if we change our lights to green, we're not going to have bird strike" and then you say, "Well, the conditions are going to require a change to green lights" then that's adaptive management. There's a slight, "That's a bit silly" element to that, but when you think --

MR SHAW: Yes, but in the end, you've still got --

MR P ANDERSON: Can I finish that point?

MR SHAW: Yes, sorry.

MR P ANDERSON: I just want to finish the point first, because if you don't have the requirement to change a lightbulb colour, then the effect, which is the increased seabird strike or the seabird strike which you're concerned about, there's no way in which the conditions can address that, so you're just going to continue to have the seabird strike. So while it might seem trivial - and I don't think it is trivial - that mechanism is really important to address the effect, so you need --

MR SHAW: That's precisely the point, isn't it?

MR P ANDERSON: Yes.

MR SHAW: But it's a point that cuts two ways, doesn't it?

MR P ANDERSON: Explain.

MR SHAW: Well, for example, if you take the question of changing your light or changing the shade, the fitting or the direction of the beam from a lightbulb in order to meet a compliance or an expectation expressed in a condition that relates to minimising the possibility of seabird strike, whatever, are you saying that any operational response to such a condition - which almost by definition is not going to be related to a quantifiable number in respect of this particular question - that any operational response to that which is anticipated by conditions represents adaptive management?

MR P ANDERSON: No, that's not what I'm saying. I think what we have to look at is we have to look at what the conditions provide for. You've taken it to the extreme and said we're here talking about a minor change, which is the changing of light, but what the conditions provide for are a whole range of operational responses. It might be that we have our boat, and I remember on Chatham Rise application some evidence was given about very serious impacts of seabird strike on boats. It might be that your operational response is to not operate the boat at night or there might be a really serious operational response which is required to address the effect. So what you've got are conditions which require for an operational response which might be trivial, but it might be significant.

MR SHAW: Well, let's assume that the issue is significant, the mischief that you're trying to deal with is significant. That must be given in respect of this particular example, but where the intervention required, the operational intervention required, is and of itself trivial ...

MR P ANDERSON: The answer is in the conditions. What do the conditions provide for? Do the conditions provide for a range of responses from the trivial to the significant? If the conditions provide for a range of operational responses, then that contributes to adaptive management approach. I don't see how you could do it any other way. You couldn't simply say, "Well, we've got a trivial here, because all you've got to do is change --"

MR SHAW: No, no, we're saying right from the beginning the effect is not trivial.

MR P ANDERSON: Yes, so I think that then in the context of the conditions, which the conditions would provide for an assessment of effects. We've got a whole lot of birds hitting this vessel. We need to do something about it. We're going to go and we're going to assess what we can do about it. Look, we've actually got quite a simple solution and we're going to require the implementation of that solution, which is simply a changing of lightbulbs, but if you look at that process, that's an adaptive management process. If the different situation was, "We've done our assessment and we can't find a simple solution, it's a hard solution. We

have to do some serious changes to what we're doing in terms of when we operate and how we operate" then that is still adaptive management.

[4.40 pm]

Just because the output that comes at the end is trivial or it's not trivial, that doesn't change that your approach is adaptive management. Mr Currie would like to say a word.

MR SHAW: In the spirit of co-operation, which is --

MR CURRIE: For me, sir, I would just posit two scenarios. The first scenario is that there have been studies done on seabirds. Firstly, there is evidence before you that the lights are a hazard to seabirds; secondly, there is evidence before you that green lights will mitigate against that problem. You then put in a condition saying that, "You should have green lights", clearly not adaptive management. On the other hand, you have a situation where there is some vague concern that there may be a problem with birds and bird strike and you therefore put a condition saying that, "You shall monitor the number of birds, see how many are killed and make changes accordingly", that clearly is adaptive management.

Now, I want to make it very clear that KASM and Greenpeace - and I suspect Forest and Bird - are not against adaptive management in principle. What we are making submissions on is the Act. The Act is very clear. We are working within the confines of the Act, sir.

MR SHAW: Yes. We are going to go down and try and decipher, aren't we, eventually what the intention - not just the plain language, but the intention - of the legislation might be. The question of sufficient necessary components and sufficient components to constitute a regime is clearly a matter I think we're going to have to turn our attention to, because otherwise I do think you wind up with trivialised law at least.

MR P ANDERSON: My submission would be that conditions would say you can't have a population effect on a threatened species, which say you have to set indicators for that and which say if you breach those indicators, you have to do an operational response to make sure to address that. In no way can that be considered trivialisation. The only situation that raises a concern is that there might be a simple solution to a serious problem.

MR SHAW: I just want to avoid any misunderstanding at all.

MR P ANDERSON: No, I understand.

MR SHAW: I'm going to say again this is not about whether the effects are trivial.

MR P ANDERSON: No, I understand that, but you talked about trivialised law and I don't think those conditions are trivialised law. I think they're important conditions to deal with an important issue. The only concern or issue about trivialisation is there might be a simple solution to the problem.

MR SHAW: That is precisely the point.

MR P ANDERSON: Just because there is a trivial solution to a serious problem doesn't mean that all the potentially non-trivial solutions should also get ignored or withdrawn or whatever the word is, because it is part of a range of potential solutions from the trivial to the very significant.

MR SHAW: Okay. Look, I think these are issues that we are going to be debating much later than this evening.

MR P ANDERSON: Oh, absolutely, they go to the heart of this application. There is no question about that, I don't think.

MR SHAW: You say so on day one --

MR P ANDERSON: And I say that now.

MR SHAW: -- and I think that we all recognised it then, we recognise it now.

MR P ANDERSON: That's correct.

MR SHAW: I think everybody knows that this is a major issue that's confronting the Decision-making Committee. Anyway, thank you very much. I'll just see whether my colleagues have got questions. Dr Thompson, Ms McGarry, Mr Coates? No. Here we are, everybody has time to catch their aeroplanes, I think. Look, can I just again apologise to everybody about the pressure that we've put things under this afternoon by scheduling, but again it does go to this question. It's a shame Mr Dawson isn't here, but we do need to take the time needed to do the job and that's been reflected, I think, in the way in which we've treated witnesses, where they've been on the stand as long as it takes for them to complete their presentations and for us to complete our questioning of them.

MR P ANDERSON: I appreciate it. It's on? Speak into it. And while Ms Sitarz might not agree, we appreciate the thoroughness with which you're doing this as well.

[4.45 pm]

MR SHAW: And we're going to keep doing it. Okay, thank you all very much and thank you for your patience.

MR CURRIE: For that, I am quite happy to postpone our submissions to a later time if it gives more time for adaptive management.

MR SHAW: That is on Monday we are hearing from Mr McCabe?

MR CURRIE: On Monday, sir, yes.

MR SHAW: Look, I think it would be really helpful particularly if the parties who share ambitions with each other around this can have a conversation about how we can get the job done best. Thank you, Mr McCabe, for that, because I suspect that every little drop we save from here on in is going to be quite important to us. So any offers of time and co-operation in that respect will be very greatly appreciated in order to take the pressure off people on Monday. That's your answer. Mr McCabe, thank you for that, and it's really going to be down, at this stage, to submitters, because we are going to hear the legal submissions from those who remain on Monday on the matter of adaptive management. Okay, thank you all very much. Good afternoon.

MATTER ADJOURNED AT 4.47 PM UNTIL MONDAY, 20 MARCH 2017