
TRANSCRIPT OF PROCEEDINGS

**MARLBOROUGH SALMON FARM RELOCATION ADVISORY PANEL
PUBLIC HEARING**

**HELD AT
MARLBOROUGH CONVENTION CENTRE,
42A ALFRED ST, BLENHEIM,
ON 22 MAY 2017**

Appointed Panel Members:
Professor Peter Skelton, CNZM (Chairperson)
Mr Ron Crosby
Mr Alan Dormer, MNZM

[10.32 am]

CHAIRPERSON: Good morning, everybody and welcome to the final day of the hearings of the Marlborough Salmon Relocation Advisory Panel. Today, in
5 replies or responses to the material that we've received over the last few weeks, we have asked for some additional material from Marlborough District Council, from New Zealand King Salmon and then there will be a response from the Ministry for Primary Industries. Is this working? Yes. That will include a memorandum from Mr Richard
10 Fowler, QC, who will present that to us in response to questions that we have asked and Mr Dan Lees, who opened the hearings some weeks ago now on 10 April.

15 So, first of all, I think we have two people from the Marlborough District Council here, is that right? Yes. Would you like to come over here and take seats by the microphone, please? Now, who have we got? You are ...

20 GINA WALSH: Gina Ferguson, Compliance Manager at Marlborough District Council.

CHAIRPERSON: That's right, Compliance Manager and ...

25 DR URLICH: Dr Steve Urlich, I'm the Coastal Scientist in the Environmental Science and Monitoring team at council.

CHAIRPERSON: Coastal Scientist ...

DR URLICH: In the Environmental Science and Monitoring team at council.

30 CHAIRPERSON: Now, the reason we asked to see you today was because some issues have arisen during the course of the hearings about the council's ability to monitor and enforce resource consents and the terms and conditions of those and, indeed, this proposal, as I'm sure everybody's aware and you're aware as well, is heavily dependent on that because it involves
35 quite stringent rules around adaptive management, which would be dependent on what the monitoring and so forth showed over a period of years. So, because there were some suggestions that the council had an ability to do that, we thought it would be useful to hear from you in general terms and I guess that comes from you, Ms Ferguson --

40 MS FERGUSON: Yes.

CHAIRPERSON: -- about the council's overall policy on monitoring and enforcement. I am somewhat familiar with these things, being a Canterbury Regional Councillor myself. And then, I think, Dr Urlich, were you going to address a specific matter?
45

DR URLICH: Real-time monitoring ...

- CHAIRPERSON: Sorry?
- DR URLICH: The real-time monitoring --
- 5 CHAIRPERSON: Yes, the real-time monitoring, that's right and we have a map from you, is that right?
- DR URLICH: Yes, just as a prompt to inform you about what we do --
- 10 CHAIRPERSON: Have you got some presentation prepared or are you just going to speak generally to this?
- MS FERGUSON: I'll just speak generally. I do have some maps and things that may assist you as we go through it.
- 15 CHAIRPERSON: Yes. Can people hear Ms Ferguson?
- FEMALE SPEAKER: No.
- 20 CHAIRPERSON: So we'll just have to try and get you a bit closer to the microphone, if you don't mind.
- MS FERGUSON: Can you hear me now?
- 25 CHAIRPERSON: I don't know.
- MS FERGUSON: Can you hear me?
- CHAIRPERSON: Can you hear? No. It's on, is it? I don't know whether you can bring
30 it any closer to you or move your seat.
- MS FERGUSON: Is that any better?
- CHAIRPERSON: No better, so it's not working really, is it?
- 35 MALE SPEAKER: But still keep it close to you, if you can, all right.
- CHAIRPERSON: A big loud voice.
- 40 MS FERGUSON: Sure.
- CHAIRPERSON: All right, thank you. What do you want to tell us then about the council's monitoring and enforcement --
- 45 MS FERGUSON: I thought perhaps I could start with just a general explanation of how we undertake monitoring.
- CHAIRPERSON: Yes, please.

MS FERGUSON: And then I could be more specific about a particular matter that came up in this hearing process.

CHAIRPERSON: Yes.

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MS FERGUSON: So, council has a reactive and a proactive monitoring programme. The reactive programme is in response to complaints and incidents. Our proactive monitoring consists of a strategic monitoring programme. This programme prioritises monitoring of consents and activities, based on such factors as -- excuse me, if I just pause there. Can you hear? Okay.

10

CHAIRPERSON: Not getting that either. Is there anything we can do about this? Well I think it's important that people hear this, so I'm going to take a short adjournment until we can sort that out. All right. So, we'll just adjourn the hearing until we get that done. Thank you.

15

ADJOURNED [10.40 am]

20

RESUMED [10.42 am]

CHAIRPERSON: Hear that, everybody? Right, then we'll continue, Ms Ferguson.

MS FERGUSON: Would you like me to start from the beginning?

25

CHAIRPERSON: I think that would be good.

MS FERGUSON: Okay. Compliance has a reactive and a proactive monitoring programme. The reactive programme is in response to complaints and incidents. Our proactive monitoring consists of a strategic monitoring programme. This programme prioritises monitoring of consents and activities based on such factors as environmental adverse effects, national or regional issues, social factors and compliance history.

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New Zealand King Salmon's consents are in council's prioritised monitoring programme with annual reporting to council's Environment Committee on monitoring and compliance of these consents. While the RMA does not distinguish levels of non-compliance, recognised practice by councils is to rate non-compliance using a scale. Council use a colour scale from green for compliant, yellow for technical non-compliance, orange for minor non-compliance, to red for significant non-compliance.

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The Act provides a number of enforcement tools, both directive and punitive. Council takes a graduated enforcement response to non-compliance, based on its significance and effects, also in consideration of evidential and public interest's tests.

5 The range of methods used by a council to achieve compliance include education, through to prosecution. Monitoring of New Zealand King Salmon's consents is principally a desktop exercise. Since the Board of Inquiry's decisions these consents have a significant number of conditions, which are often complicated, requiring peer review and expert input.

10 I thought it may benefit the Panel if I provided a copy of our Compliance Monitoring Programme, which was actually presented to Environment Committee. It does outline how we undertaken the monitoring, including --

CHAIRPERSON: That was the one that was sent to us.

15 MS FERGUSON: No, that was the actual report. I did send --

CHAIRPERSON: The programme.

20 MS FERGUSON: Yes.

CHAIRPERSON: Yes, yes.

MS FERGUSON: This actually explains how we do our monitoring programmes.

25 CHAIRPERSON: Thank you very much, yes.

30 MS FERGUSON: Along with that, I also can present you an appendix of the factors that we consider when we look at an enforcement matter. For more escalated enforcement decisions, council has an Enforcement and Prosecution Committee which hears and considers such matters.

If you would like me, I can now go on to the particular incident, which was referred to during the hearing, which was regarding debris within the marine area, I understand, is that correct?

35 CHAIRPERSON: Yes, that's right.

40 MS FERGUSON: Okay. Marine farm debris complaints, just to give you an idea about how frequent these are; we have actually received four since 2012 and none in the past two-plus years.

CHAIRPERSON: Four complaints ...

45 MS FERGUSON: Four complaints in total since 2012.

CHAIRPERSON: This is from marine farming debris, is it?

MS FERGUSON: Yes, that's correct.

CHAIRPERSON: Four complaints since --

MS FERGUSON: 2012.

5 CHAIRPERSON: -- 2012, none ...

[10.45 am]

10 MS FERGUSON: In the last two-plus years, nearly three years.

CHAIRPERSON: That's what we heard, none in the last two and a half years.

MS FERGUSON: Not that I have found on our system, no.

15 CHAIRPERSON: Right.

MS FERGUSON: Principally, they have resulted from shellfish marine farm ties, from the backbone, which are snipped off during harvesting. The condition that relates to this matter is not very prescriptive, so in the matter that was presented I understand was in East Bay. In that particular bay there is a large number of marine farms, including both shellfish and fin fish farming. Just to give you an illustration of the farms that we're looking at or the numbers, I also have a map here that may be useful.

25 For the farms that are in this area the general condition is that:

30 "The consent holder maintain all structures to ensure that they are restrained, secure and in working order at all times so as to not create a navigational hazard and take whatever steps are reasonably necessary to retrieve any non-biodegradable debris loss in or from the permit area."

35 So, this is not a very prescriptive condition but just gives a general obligation on the consent holder. The King Salmon site, which is within that bay, has the same condition on it.

CHAIRPERSON: Looking at that, do you know which site that is?

40 MS FERGUSON: Yes. It's this site here, if you can see that or I can ring it and give you the copy.

CHAIRPERSON: Is it the large one?

45 MS FERGUSON: Yes, it is.

CHAIRPERSON: The large blue one.

MS FERGUSON: That's correct.

CHAIRPERSON: Yes. Yes.

5 MS FERGUSON: Common practice in the aquaculture industry is equipment on board to recover loose ties that inadvertently fall overboard during harvesting or clean up. They also have guidelines and training for crew involved and crew involved in beach clean-up. Evidence of debris usually is inconclusive in identifying the origins or the offender where multiple farms operate. I'll provide you some images that may illustrate this.

10 CHAIRPERSON: Have you got these to go on the screen or what?

MS FERGUSON: No, I've got copies for you.

15 CHAIRPERSON: You haven't got anything to put up so people can see?

MS FERGUSON: No, sorry. The first photo I provide you is what was provided -- no, sorry, the other one, Louise. Yes, the single photo, that's what's provided by a complainant. It's quite clear from there that it is debris most likely from a mussel farm operation. The second set of photos you have there is actually from a beach clean-up operation, which you can see it consists of a lot of general rubbish, as well as what could be defined as marine farm debris.

25 The Marine Farming Associations have an environmental strategy, which includes minimising debris. It has beach clean-up programme, which is a voluntary programme undertaken by the Marine Farming Association and the frequency depends on the likely impacts of those different beach areas. Who is involved in these clean-ups is co-ordinated by the Marine Farming Association.

30 Council, in response to such complaints, have co-ordinated an approach with the Marine Farming Association, who then contact all of the farms in the related area and ensure the matter is addressed.

35 I will provide you also with the correspondence for that particular complaint, which outlines the process that was followed, the response from the Marine Farming Association, as well as the evidential deficiencies that we had.

40 CHAIRPERSON: Now, is this the complaint that related to the --

MS FERGUSON: To the matter of the hearing, yes.

45 CHAIRPERSON: -- the buoy that was parked up here.

MS FERGUSON: Well this is the one that we have on file from that particular person. There are two on file. I have only brought the one that was the earlier, just to give you a picture.

CHAIRPERSON: But did it involve a mussel farm buoy?

5 MS FERGUSON: I don't know if there was a buoy on that one. It's got the debris, which I provided you the photo of. But I understand that is the one that they were referring to.

CHAIRPERSON: All right. So this goes back to 2012?

10 MS FERGUSON: 2012, yes, that's correct.

CHAIRPERSON: I mean I haven't had time to look through these but does this include some record of the complaint itself?

15 MS FERGUSON: That's the final response from the investigating officer in concluding the investigation.

CHAIRPERSON: Yes, but there's a number of other documents that go with that, isn't there?

20 MS FERGUSON: Yes, there are. I didn't bring all of them but the photo that I provided is the one that initiated the complaint.

25 CHAIRPERSON: This letter at the top is addressed to, "Dear Mark." Who's Mark, do you know?

MS FERGUSON: Yes, he was the gentleman that presented at the hearing. I just removed the other details under the address for privacy.

30 CHAIRPERSON: All right.

35 MS FERGUSON: Since the Board of Inquiry decision the resource consents issued for New Zealand King Salmon have included a solid waste management plan requirement for the consented farms. This has been provided. Again, this is not of a prescriptive standard and sets out the general practices for controlling debris. And I can provide you a copy of the relevant section of that management plan, if you would like.

CHAIRPERSON: Now this is an extract from ...

40 MS FERGUSON: It's from part of their shark and mammal management plan. That title may not be quite correct but ...

CHAIRPERSON: There's some small writing here, marine mammal and --

45 MS FERGUSON: Shark.

CHAIRPERSON: -- shark management.

MS FERGUSON: Yes. It's included as part of that plan.

- CHAIRPERSON: Was that a requirement of the Board of Inquiry, was it?
- 5 MS FERGUSON: That's correct and it is in your proposal currently from MPI to be included as a standard or condition.
- CHAIRPERSON: Yes, yes. Right. Anything else?
- 10 MS FERGUSON: Not unless you have any further questions --
- CHAIRPERSON: No.
- MS FERGUSON: -- or if you wanted to talk about the adaptive management, is that one of the questions you had for me?
- 15 CHAIRPERSON: Yes, I would like to know how you plan to deal with that.
- MS FERGUSON: Okay.
- 20 CHAIRPERSON: You're already doing it, I mean you're already doing it with the three farms that were consented by the Board of Inquiry.
- MS FERGUSON: That's correct.
- 25 CHAIRPERSON: And we got last week copies of the monitoring reports from the Cawthron Institute.
- MS FERGUSON: Yes.
- 30 CHAIRPERSON: That presumably was sent to the council.
- MS FERGUSON: That's correct.
- CHAIRPERSON: Has the council published those?
- 35 MS FERGUSON: Those monitoring reports are available on the monitoring file under those consents, so, yes, they are publicly available. However, the determination of compliance has not been completed for those records, as of yet, so there'll be a separate report that goes on the farm.
- 40 CHAIRPERSON: So, members of the public can read those reports, can they --
- MS FERGUSON: That's correct.
- 45 CHAIRPERSON: -- by going to the council's website?
- MS FERGUSON: Yes.

CHAIRPERSON: Okay. And that's the first lot of reports that's been done on those three farms, is it?

5 MS FERGUSON: For one farm, I think, there might have been an annual report already.

CHAIRPERSON: Okay. What's the process when you receive those monitoring reports, Ms Ferguson? What's the process then?

10 MS FERGUSON: Okay. So, currently from the consents issued from the Board of Inquiry decision, as well as the ones that have been varied since that decision, there is the adaptive management approach. It is much the same as what's being proposed by MPI. Probably the most significant difference is the MPI's proposal with regard to the discharge adaptive management approach.

15 So, if I first just take you through what's currently involved, as I already identified, it is a desktop exercise. So, it first has gone through a peer panel to go through all those reports and then we check them off against the conditions of consent as well, with the assistance of some of our in-house experts, such as Dr Steve Urlich.

20 The adaptive management approach is used in a number of consents issued by council, including other aquaculture industries, such as shellfish farming. Annually there's the Marine Environment Monitoring Adaptive Management Plan and then the annual report is looked back on, whether that plan has actually been complied with, as well as actually the enrichment levels, the water quality and other factors.

25 So, it's currently in operation, is what I can say is the monitoring of those consents. It is an extensive amount of work and complicated, due to the sheer scale of those conditions. Just by illustration, the reports that have just come in in the last six weeks probably are now about that high that have to be gone through to check on compliance.

30 CHAIRPERSON: Including these three that we've seen.

35 MS FERGUSON: Including those.

40 CHAIRPERSON: Which are all, I think, in excess of 100 pages, yes.

MS FERGUSON: And, voluntarily, New Zealand King Salmon has been providing similar reports for their other permit sites, which are not required under conditions or consent to provide all that information.

45 **[11.00 am]**

CHAIRPERSON: Yes.

MS FERGUSON: If I can --

MR CROSBY: Can I just interrupt there, are those voluntary reports on council's website as well?

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MS FERGUSON: Yes, they are.

CHAIRPERSON: And just so we've got it clear, if you go to the council's website, what do you look for?

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MS FERGUSON: So, the easiest way to do it is if you go into our property files, which is the searching engine and --

CHAIRPERSON: Your property file.

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MS FERGUSON: Property files.

CHAIRPERSON: Yes.

20 MS FERGUSON: You have an option of being able to enter in a consent, a resource consent number. You can enter in the specific resource consents for any of the New Zealand King Salmon sites. That will open up a file selection. There is a file there called Resource Consent Monitoring and those reports are held under that as PDS.

25

CHAIRPERSON: As part of that consent file.

MS FERGUSON: Yes, under the monitoring sub --

30 CHAIRPERSON: So, if you don't know the consent file number, is there a nominal index or something?

MS FERGUSON: Yes, you could gain that information through Smart Maps. We have a Smart Map system as well. And we do also receive a number of queries where people just ring up and ask us the consent number.

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MR CROSBY: So that Smart Map system is on your website.

MS FERGUSON: That's correct.

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CHAIRPERSON: Yes. And that would give you the consent number and then you can go --

MS FERGUSON: That's correct.

45

CHAIRPERSON: Yes.

MS FERGUSON: Yes.

- CHAIRPERSON: Right, thank you.
- MS FERGUSON: I'm not sure if you want to talk at all about the current proposed adaptive management with the discharge and the differences there.
- 5 CHAIRPERSON: Yes, that would be useful to know.
- MS FERGUSON: Okay. So, the current proposed standard or condition for adaptive management for discharge relates to cumulative levels across multiple farms. This is to do with the Pelorus.
- 10 CHAIRPERSON: Now, by current you mean the ones that ...
- MS FERGUSON: By the proposal, sorry, the current proposal.
- 15 CHAIRPERSON: The proposal.
- MS FERGUSON: Sorry.
- 20 CHAIRPERSON: Yes. You're now addressing the differences between the proposed adaptive management conditions for this proposal, as distinct from what exists at the moment --
- MS FERGUSON: That's correct.
- 25 CHAIRPERSON: -- with the other consented farms.
- MS FERGUSON: Yes.
- 30 CHAIRPERSON: Right.
- MS FERGUSON: So, the current operative consents --
- CHAIRPERSON: Yes.
- 35 MS FERGUSON: -- do have adaptive management, including for discharge.
- CHAIRPERSON: Yes.
- 40 MS FERGUSON: The difference with the standard or condition, as it's being written, is it does also relate to a cumulative amount, so --
- CHAIRPERSON: And the others don't.
- 45 MS FERGUSON: No, they are distinct farm by farm --
- CHAIRPERSON: Right.

MS FERGUSON: -- whereas if you look at the proposal under 20, standard or condition 20 ...

CHAIRPERSON: Just hand on a minute, condition 20, yes.

5

MS FERGUSON: Yes, so it refers to that the total of the initial annual discharge, I'll miss the bits in the middle, "Shall not exceed 6,000 tonnes per annum." So if you looked at the six that are listed ahead or take away the bottom one because that doesn't relate to this one, you can see that you couldn't actually put all of those initial discharges in to meet that 6,000, so it's looking at the cumulative across them, as well as --

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MR DORMER: Sorry, can you say that again?

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MS FERGUSON: So, standard 20, the total of the initial annual discharge of fish feed at the first five farms that are listed there, "Shall not exceed 6,000 tonnes per annum." So that means for their initial first time they put them in, the total cumulative, the way I'm reading it, is that it cannot exceed 6,000. So, in effect, if you looked at that and, say, you used Blow Hole North and you put in your 2,250 tonnes and then you put your Blow Hole South in and you put 2,500 tonnes, you couldn't put in your Waitata mid-channel and put in the 3,500 because that would exceed your 6,000 in total.

20

CHAIRPERSON: Yes.

25

MS FERGUSON: Okay, and the same is in condition or standard 21 where it refers to what the total discharge is, must be less than 6,000 tonnes. Now, how that is different is because it is talking about the cumulative effect across different permits or different farms. There would be difficulty to apply this on a consent basis if they each had their own permit.

30

And, in future, if they were ever held by different consent holders, this would be particularly difficult, as such an adaptive management approach would require the co-operation and the co-ordination across multiple farms. So I've just commented that some thought is needed on how this can be applied as a condition of consent, unless they were to operate as a single consent or permit.

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CHAIRPERSON: And that wouldn't be normally the case; you can see by its site, can't you?

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MS FERGUSON: That wouldn't normally be the case, that's correct.

CHAIRPERSON: Yes, and indeed that's what this proposal contemplates, doesn't it, an application for consent by site?

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MS FERGUSON: I understand that the consent applications are to be done by site. I'm just highlighting that some thought would have to be --

- CHAIRPERSON: Yes, I'm pleased that you have, thank you very much, yes. You haven't got a solution to that yourself, I suppose.
- 5 MS FERGUSON: My only solution that I thought of was if they were as a single permit or --
- CHAIRPERSON: One permit for the ...
- 10 MS FERGUSON: Yes, or perhaps if you did a single permit to start with because there's a stop-swap process and then when another one was to come online you could incorporate that into another new application for those two sites and, again, there sites and, again, four or however many, if the proposal was to go ahead.
- 15 CHAIRPERSON: From the council's point of view in monitoring and enforcement, would that present difficulties, having one permit for sites in different parts of ...
- 20 MS FERGUSON: No, provided all of the consent conditions related. I can't see that as being a difficulty. It will be more of a difficulty if such a condition or standard is included on separate permits because all would be in non-compliance if that 6,000 tonne was exceeded.
- 25 CHAIRPERSON: Yes. If there's a non-compliance, the way this plan changes, its set up or its architecture, these conditions that we're looking at now are conditions precedent, aren't they, to it being a restricted discretionary activity?
- 30 MS FERGUSON: Yes, I understand that's correct.
- CHAIRPERSON: So if there were a breach of condition 20 it would cease to be a restricted discretionary activity, is that your understanding?
- 35 MS FERGUSON: It's given restricted discretionary --
- CHAIRPERSON: It would be done on this.
- MS FERGUSON: Yes, I don't think I'd go into the planning process, if you don't mind.
- 40 CHAIRPERSON: No, it's really a matter for your planner.
- MS FERGUSON: The only other way you may address that is by actually specifying the discharge, which still is in line with this for each permit but is a lower level in total and then that could be varied as well for each permit, just as another possible solution.
- 45 CHAIRPERSON: Yes. Are there any other difficulties that you see with ...

- MS FERGUSON: I'm not sure how much you want to go into your conditions and standard or whether there will be any ability to actually input into this, should a decision be made to proceed. There are --
- 5 CHAIRPERSON: Well, from my understanding, this is the proposal and subject to what we may recommend to the Minister. We may well recommend changes to the proposal and it'll be for the Minister to decide whether he accepts that or not.
- 10 MS FERGUSON: Okay.
- MR DORMER: I think the witness is unsure as to --
- MR CROSBY: How far she goes.
- 15 MR DORMER: -- what extent the conditions should be put, all those conditions of the management resource consents and be dealt with through that process, as compared with the extent to which they can be dealt with through this process.
- 20 MR CROSBY: Yes, yes.
- MR DORMER: I must say, if she is unsure I share that uncertainty.
- 25 MR CROSBY: So do I, yes. But if you've got other issues that strike you in relation to these proposed conditions, then now is the time to let us know.
- MS FERGUSON: There would be a number of tweaks that I would make to these if they were conditions that were granted with a consent for a coastal permit.
- 30 CHAIRPERSON: They're not contemplated, these conditions, I can see that.
- MS FERGUSON: No, but a lot of them would need to be incorporated as conditions of consent to be able to reflect that. These are operational matters, so for ongoing compliance, if they weren't a condition of consent I would envisage them to be conditions of consent, moving forward, in some manner or form. But, again, that's probably a matter best addressed by a planning officer.
- 35 MR DORMER: It's easier for you if they're conditions of consent, isn't it, because then you have a direct prosecution route?
- MS FERGUSON: That's correct.
- 45 CHAIRPERSON: Yes.
- MR DORMER: And you can cancel or suspend the consent, whereas if they breach a jurisdiction prerequisite for the status, I guess your enforcement route is more complicated.

- 5 MS FERGUSON: They are two different paths. There is enforcement possibilities under both but I think, as a condition of consent and certainly from a consent-holder point of view, to have that within their actual consent document as conditions does provide clarity.
- 10 MR DORMER: I think I'd rather see them in the consent document; the fines are tougher there for a start and it's also good to have a document where you can, here it all is, that's what we've got to do, keep them in one place.
- MS FERGUSON: But, of course, conditions of consent are said at the time of --
- 15 CHAIRPERSON: Sorry?
- MS FERGUSON: Conditions of consent, of course, are said at the time that the consent is considered by the officer.
- 20 CHAIRPERSON: That's true, yes. With the Board of Inquiry consents and they involved plan change too, didn't they?
- MS FERGUSON: Yes, that's correct.
- 25 CHAIRPERSON: Is this the way it was done?
- MS FERGUSON: I understand that this may be a mix of the Board of Inquiry decision, as well as the two consents that have been varied since then. I haven't gone through each and every one to determine where they are from, maybe ...
- 30 CHAIRPERSON: I'll pursue that with Louise.
- MS FERGUSON: Some of them are definitely different than what has recently been granted.
- 35 CHAIRPERSON: Yes, but it's the process I'm talking about.
- MS FERGUSON: The process?
- 40 CHAIRPERSON: Yes.
- MS FERGUSON: Yes, that was a plan change, along with resource consent.
- 45 CHAIRPERSON: I know it was but did the plan change include a set of conditions like the ones we're looking at now?
- MS FERGUSON: They were heard together and the Board of Inquiry granted the consents with the conditions, I understand.

CHAIRPERSON: But were they included in the plan change?

MS FERGUSON: No.

5 CHAIRPERSON: No, right.

MS FERGUSON: But I stand to be corrected.

CHAIRPERSON: Right.

10 MR DORMER: Can I ask a basic question about condition 20?

MS FERGUSON: Yes.

15 MR DORMER: We know or we can check how much feed goes into the pens and they can be required to keep records of that.

MS FERGUSON: That's correct. They usually would be required to keep a log.

20 MR DORMER: How do you measure the discharge?

MS FERGUSON: The log is usually the feed that's being dispersed within the pens, so that is the discharge.

25 MR DORMER: Okay.

MS FERGUSON: So it's not the discharge, sorry, that comes down the bottom, it's actually what goes into the water.

30 CHAIRPERSON: Yes, it's not what comes out the bottom of the net.

MS FERGUSON: Yes.

CHAIRPERSON: It's what goes in at the top of the net, so it's the feed, yes.

35 MR DORMER: Yes.

CHAIRPERSON: Okay?

40 MR DORMER: Yes, that's fine.

CHAIRPERSON: Yes. So, what else would you like to draw to our attention with these?

MS FERGUSON: If you go to condition 5, the use --

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[11.15 am]

CHAIRPERSON: Noise?

MS FERGUSON: Yes.

CHAIRPERSON: Yes.

5 MS FERGUSON: The use of the description, the noise descriptor L10 --

CHAIRPERSON: Yes.

10 MS FERGUSON: -- is inconsistent with the use of the noise standard referred to in condition 6, which is the 2008 standard and should instead be a noise descriptor of an LAeq.

CHAIRPERSON: L ...

15 MS FERGUSON: Aeq.

CHAIRPERSON: LAeq.

20 MS FERGUSON: Yes.

CHAIRPERSON: I know about Leq, what's LAeq?

MS FERGUSON: It just defines the frequency range.

25 CHAIRPERSON: And that's what the 2008 standard requires, is it?

MS FERGUSON: Yes, the L10 is for the older standard --

CHAIRPERSON: Yes.

30 MS FERGUSON: -- which is the 1991.

CHAIRPERSON: The 1991 one, yes. And that's 55 dBA for 10 per cent of the time or something, isn't it?

35 MS FERGUSON: Yes, that's right, that's what an L10 is.

MR CROSBY: Sorry, how should that be expressed, as an LAeq?

40 MS FERGUSON: LAeq, capital L --

MR CROSBY: Yes, yes, but how in terms of the condition?

45 MS FERGUSON: So you can interchange, they're not exactly the same and a noise consultant may want to advise where there are 55 dBA L10 is equivalent to the 55 dBA LAeq, based on the type of noise because that's actually what determines whether they are equivalent or not.

- MR CROSBY: In terms of the re-consented ones that you've re-consented, what noise limit has been utilised?
- 5 MS FERGUSON: They have these noise limits with an LAeq for the most recent.
- MR CROSBY: Thank you.
- CHAIRPERSON: But the numbers don't change.
- 10 MS FERGUSON: The numbers didn't change.
- CHAIRPERSON: All right. All right, thank you. Anything else?
- 15 MS FERGUSON: Probably the other tweaks are more about the specification about providing information to council.
- CHAIRPERSON: Where's that?
- 20 MS FERGUSON: Just within a lot of the information that's required to be kept --
- CHAIRPERSON: In general, yes.
- 25 MS FERGUSON: -- the addition of having to require to provide that to council, either annually or on request and so I haven't identified condition by condition, with reflection.
- CHAIRPERSON: No. So, what's your point about those requirements? Are they not specific or what?
- 30 MS FERGUSON: Yes, within the ones that I've seen they're about recording it but it is of assistance to council if it's actually a requirement to provide it to council, either annually or on request, rather than us having to request it, if it's always coming in annually. At the moment most of that information is actually coming in to us through the annual reports.
- 35 CHAIRPERSON: Anything else?
- MS FERGUSON: No, not at this time.
- 40 CHAIRPERSON: No. So, can we go back to the question I asked you a little while ago, having got the monitoring reports, what process do you then follow with those reports and what happens after that?
- 45 MS FERGUSON: So they will be allocated and they have been to a monitoring officer, who will go through the annual reports and pose any questions they have with regard to scientific matters to our in-house expert, Dr Steve Urlich.

On response from that, they will either request further information or make a determination on the compliance, which is then provided to the consent holder and an annual report is presented to the Environment Committee on all of those consents within that monitoring programme.

5

CHAIRPERSON: With any recommendation.

MS FERGUSON: If there is any noted non-compliance --

10

CHAIRPERSON: Yes.

MS FERGUSON: -- then that will go through our process of determining the appropriate action to be taken in that matter. And factors to consider there are including the significance of it, so such things as a technical non-compliance may be because the report was required to be provided on 30 April but in fact it was provided, say, on 5 May.

15

That actually makes it non-compliant with its condition of consent but is something we'd consider a technical non-compliance and while reminding the consent holder, unlikely to take any further action in such a matter.

20

CHAIRPERSON: Just by way of example, the monitoring report showed that the maximum amount of feed discharged had been exceeded. How would you regard that?

25

MS FERGUSON: Then we would be calculating how significant the exceedance was, again what the potential impacts were and considering what response or enforcement was required, including such things as if the enrichment levels were greater than the 5.6. It would be following to make sure the best practice was followed with regard to management response and having those sites fallowed.

30

CHAIRPERSON: All right. Thank you very much for that information, Ms Ferguson. Now, Dr Urlich.

35

DR URLICH: Good morning, Commissioners. During the Board of Inquiry process, council was criticised for not having state of the environment information to characterise the water column in Tory Channel, Queen Charlotte Sound and Pelorus Sound. Council had not invested in monitoring. As a response to that, in 2011, council established a number of monitoring sites in Tory Channel and Queen Charlotte Sound and in 2012, did the same in Pelorus Sound.

40

5 I draw your attention to that map on the screen. That shows the spatial location of the monitoring sites. There's 11 sites in Pelorus Sound and 10 or 11 in the Queen Charlotte Sound. Every month, our monitoring team go out and collect the range of physical, chemical and biological parameters. We were collecting information in Port Gore prior to the Supreme Court decision. We continued on with that but that's recently ceased.

10 We don't collect the same information at all sites. We have a number of sites where we just characterise the physical parameters of the water column at different depths and those are those red stars you can see up here. The yellow stars are where we collect that information as well as nutrient and biological information with respect to plankton sampling.

15 CHAIRPERSON: What does CTD stand for?

DR URLICH: Conductivity, Temperature and Depth. It characterises physical properties and how they vary throughout the year. That's important and Dr Broekhuizen and Ben Knight will tell you about why that's important from a modelling perspective, I understand, and also from just understanding the dynamics of the system and how different activities influence the water column.

25 We are in the process of reviewing that monitoring. External advice that we have recently received has identified that we have good spatial coverage but our temporal coverage has been assessed as inadequate to characterise short-term fluctuations in water quality parameters and to better understand nutrient cycles.

30 This external advice from the Cawthron Institute has yet to be considered by council. It suggests that monitoring instruments attached to moored buoys would resolve the temporal deficiency in data collection. The advice predates the salmon relocation process, the working group. These instruments, these monitoring instruments attached to moored buoys would provide continuous 24/7, 365 days a year data on chlorophyll, dissolved oxygen, conductivity and turbidity at different depths in the water column. The data would be telemetered back to council for storage and almost instantaneous display through its website.

40 These instruments are expensive to purchase. We have not gone to market yet and I'll explain why shortly. Our resource consent, installation and ongoing maintenance and calibration costs, as well as IT infrastructure required to create those data. There are also staffing implications for council for ongoing project management, data analysis and reporting.

45

5 These instruments would not replace the monthly sampling as data will need to be collected for calibration purposes for those parameters to be able to be continuously measured by those instruments. Council would need to continue to collect samples for those parameters for which reliable in situ instruments have yet to be developed or are currently too expensive to purchase.

10 It is my view that there would need to be a sufficient number of these buoys, and I've estimated five to six, in strategic locations to adequately characterise the water column in Tory Channel, Queen Charlotte and Pelorus Sound at a diurnal, seasonal, annual and inter-annual timescale.

15 There is no funding currently available to fund the capital and operational costs. A proposal was planned to be put to council's long-term planning process in early 2018. The costs may be able to be shared with other users of coastal space. In initiating that study through the Cawthron Institute, we tasked them with identifying whether there is a community of interest beyond council for investing in these instruments and that includes the aquaculture and forestry industries as well as iwi and wider community.

25 Benefits of collecting continuous data are, in my view, a better understanding of coastal processes, an increased capability to model hydrodynamic and biogeochemical processes through interdecadal forcing phenomena, such as El Niño, La Niña. An output there in that diagram, Dr Broekhuizen will be able to explain the dynamics but that gives you a feel for the differences of water speed throughout the Pelorus Sound with red being significantly faster flowing than the blue which is more quiescent. So, the side bays are more poorly flushed; the main channels have greater amounts of nutrient coming in and are flushed more quickly.

30
35 There will be an increased ability to contextualise the effects of land and aquatic activities and an increased ability to set them, form limits of acceptable environmental change, which may be codified through planning or consent instruments.

40 I understand that there is a proposal in the process that you're now considering for monitoring buoys in the sounds. Should this occur, this may be beneficial for assisting and setting sun but not all standards for water column effects under an adaptive management regime. The benefits would depend on the number of buoys, their placement, type of instrumentation, provision of maintenance, costs, and ability to publicly display this information in real time. There may be also additional benefit in being able to integrate with council's state of the environment monitoring data.

5 On that note, when we go out every month, we have an arrangement under a memorandum of understanding with New Zealand King Salmon that we collect their consent data using the same equipment at the same time and it's sent to the same laboratory which improves both organisations' data sets and it's more cost effective as well.

[11.30 am]

10 CHAIRPERSON: I understood, from what Ms Ferguson said, that largely the monitoring is a desktop exercise but this isn't, is it? You would be collecting the actual data.

15 DR URLICH: This is, for pragmatic reasons; we are physically collecting the monitoring samples. When we do our monthly state of the environment run, we use our harbourmaster vessel and we have our monitoring staff and you can see right in the top there, that's me filling some water bottles. It makes sense, from an ecological perspective, for us to collect the water column monitoring required under the Board of Inquiry consents at the King Salmon sites at the same time. The collection of the information is standardised, as well as the time of day and the laboratory analyses. The laboratory analyses is done separately for King Salmon. They pay for that separately. We just ensure that it gets there, adequately chilled, to the laboratory with our samples.

25 MS FERGUSON: If I can add, the difference is I was referring to the monitoring of the conditions of consent and what Dr Urlich is referring to is the state of environment monitoring, which they collect samples at the same time for consent conditions, but ours is strictly the monitoring of individual consents, not the overall environment.

30 CHAIRPERSON: But the water quality data?

MS FERGUSON: They collect the samples at that time.

35 CHAIRPERSON: Yes. Isn't that part of the monitoring?

MS FERGUSON: It's a requirement of them to undertake the sampling as per their management plan.

40 CHAIRPERSON: Yes.

MS FERGUSON: But that's within their management plan, so it's more a sampling exercise.

45 CHAIRPERSON: What you're saying is that council, on its regular trips around, picks that --

MS FERGUSON: As I understand it, attend at the same time for our own purposes as well.

CHAIRPERSON: Right. The reports that Cawthron have provided you with, where does the data come from for those?

5 MS FERGUSON: The sampling, I understand, is undertaken at the same time that Dr Urlich is reporting that he, or other staff, are onboard to take the samples.

CHAIRPERSON: The material that Cawthron gets is what Dr Urlich is talking about.

10

MS FERGUSON: I'm not sure if some of them are unique samples though. They're for different purposes.

DR URLICH: For ten months of the year, we collect their water column data and for two months of the year, the Cawthron Institute, who are currently New Zealand King Salmon's science provider for their monitoring, they collect more intensive water column sampling to try and understand the footprint of the discharge. They do that separately and they report on their data separately as part of the consent requirement.

15

20

Because the Board of Inquiry consents have required interim water quality standards and a compliance framework for determining whether those standards are breached, it makes a lot of sense to us that that's done, interpreting our water column data at different locations with the discharge from the farm. If we collected our data on different days, there may be a natural phenomenon that's intervened which would make the interpretation much more difficult to achieve.

25

CHAIRPERSON: Right. Is there anything more you want to tell us?

30

DR URLICH: I'll leave you a copy of that map.

CHAIRPERSON: We already have that.

DR URLICH: You've got that. I would just add one thing that wasn't clear in my presentation is that our review of our water column data has been predated this process, that we initiated it because we could see these new technologies being adopted by other councils and the price of those instruments was coming down all the time. For such an important set of waterways, we can see real opportunity there in getting much data to understand the ecosystem which underpins the resource management of it. Our process, if this proposal did not go ahead, we would still proceed to plan to put in monitoring buoys, monitoring instruments on more buoys at some point in the future. It's not contingent on it is what I'm trying to say.

40

45

MR CROSBY: What sort of cost are we talking about, cost range, in terms of each of these buoys at present?

DR URLICH: I'm sorry, I can't give you a definitive answer on that.

MR CROSBY: No, but a range.

5 DR URLICH: To get five to six in the water, set up cost, consent cost, data and infrastructure cost, I think we're looking round about \$750,000 as a ballpark but I would not want to be held to that figure.

MR CROSBY: That would give five buoys.

10 DR URLICH: Yes, five or six. We would go to market. We would see out there both nationally and internationally for that.

CHAIRPERSON: How would you decide where they should be placed?

15 DR URLICH: We would seek advice, expert advice.

CHAIRPERSON: From?

20 DR URLICH: Probably in the first instance, we would consult experts both in government and in research institutions. We would also talk to our harbourmaster. There's no point in putting something in that's going to be a navigational issue. That would be informed by existing biophysical modelling as well as where, for example, key, what we call
25 influences or stresses on the environment, like their influence is likely to be felt at a range of scales.

MR CROSBY: In a general sense, would you be looking at far field locations in shallower bays, for example, in Tory Channel, Onapua Bay or Mahau Sound or something of that nature and nearer field ones for measuring more direct effects? Am I understanding that approximately?

30 DR URLICH: Conceptually, yes, Commissioner. The initial thinking is you would have some permanently moored instruments and you would have some you could move around temporarily to resolve bay scale hydrodynamics or influences of an activity that you may hold concerns about.

CHAIRPERSON: Just one other question, Ms Ferguson, I forgot to ask you earlier. It
40 really goes to the desktop exercise. I think I can understand the monitoring brief for that but if you got a complaint about debris, for example, or something going wrong on one of the salmon farm installations, how would you deal with that?

- MS FERGUSON: The complaints' process is part of our reactive monitoring and there is a different -- it's investigated by an officer who would be allocated that particular concern to try and determine whether it could be established what the issues were and where it has come from. I think that's pretty much set out, the process that was taken, in the document I provided you with the letter in response. Common practice would be to determine is there debris, where has the debris come from, can that be established and engage with the Marine Farming Association in order to address the issue if that was what was warranted.
- 5
- CHAIRPERSON: What about the particular consent holder?
- 10
- MS FERGUSON: If it could be established who the particular consent holder was, yes.
- 15
- CHAIRPERSON: Yes. That might be the difficulty.
- MS FERGUSON: Yes. That's what would normally be the difficult step, therefore, we'd go for a bay-wide approach where we would work with the Marine Farming Association to talk to all of the consent holders in that particular location. Keeping in mind that, in fact, debris can travel quite a considerable distance with the tides as well, so, in fact, it may have originated from another bay as well.
- 20
- CHAIRPERSON: Yes, and the timeliness of response?
- 25
- MS FERGUSON: We have a target of considering the severity of a complaint or a concern within 24 hours of receipt and that would normally determine on what kind of response was required.
- 30
- CHAIRPERSON: Do you have a target of dealing with all complaints within 24 hours?
- MS FERGUSON: If determining what action is required within 24 hours.
- CHAIRPERSON: Such as?
- 35
- MS FERGUSON: Such things as a spill or something imminent like that obviously requires a very fast response whereas there's other matters that can actually, due to resourcing limitations, may be addressed at a later date.
- 40
- CHAIRPERSON: How many monitoring enforcement people have you got employed?
- MS FERGUSON: There's seven full-time.
- CHAIRPERSON: Seven, and are they monitoring enforcement or do you separate those?
- 45
- MS FERGUSON: We do separate at the moment between -- no, we don't separate between monitoring enforcement but we do separate between the proactive and the reactive programmes.

CHAIRPERSON: Right. There's seven monitoring enforcement officers.

MS FERGUSON: Yes, with two vacancies at the moment as well.

5 CHAIRPERSON: But your complement is seven.

MS FERGUSON: Yes. Full complement would be eight.

10 CHAIRPERSON: Full complement, eight.

MS FERGUSON: Yes.

CHAIRPERSON: Right. Thank you both very much for that information and thank you for coming to do that. Mr Davies.

15 MR DAVIES: Thank you. I've got some written submissions which I'll hand out.

CHAIRPERSON: All right.

20 MR DAVIES: Just before I start, firstly, apologies for the state of my voice. As may be apparent, I've got something of a cold. Hopefully everybody can hear me. No one's complaining about that, so that's excellent.

25 Just in relation to the material which Ms Ferguson put to you before, my instant reaction is to have one consent for each group of farms which would be one consent for the Waitata farms and then a further consent for the Tory Channel farm. That seems to me the most appropriate way of dealing with that condition and avoid any issue of enforceability if all of those farms are, in fact, linked with that condition for a maximum cap over those farms in the Waitata Reach. I do underline the fact that King Salmon submitted that that shouldn't be there but if it was imposed, it seems to me that that's the most obvious way of dealing with it, is to have all of these new farms as part of one consent.

35
[11.45 am]

CHAIRPERSON: Including the Tory Channel one?

40 MR DAVIES: No. I would have the Tory Channel one as a separate one because there's no possibility of -- the condition only relates to the Waitata Reach farms. The Tory Channel farm would be a separate consent.

CHAIRPERSON: Yes, that's right.

45 MR DAVIES: And finally, on the matters which Ms Ferguson raised, when and to whom and what information should be provided to council is a matter of discretion under proposed rule 35.3.3.2(k).

CHAIRPERSON: Just a minute.

5 MR DAVIES: It's page 75 of the consultation document. It's paragraph (k), the third one down on that page. That's a matter to which discretion is limited, consequently, council can impose conditions in respect of monitoring and reporting requirements. That, in my submission, addresses the concern which Ms Ferguson had in respect of that issue.

10 CHAIRPERSON: Yes.

MR DAVIES: Turning to my written submissions, if I may.

15 CHAIRPERSON: Just before we go off this, now that we've got you on it, if you don't mind, and if you don't want to respond, please say so. This unusual process of having a set of standards which one would normally find in a resource consent as conditions is something that's exercising our minds and for the reason that I canvassed with Ms Ferguson about them being a prerequisite to the activity being a restricted discretionary activity. I think I'm right about that.

20 MR DAVIES: Yes. An activity must be undertaken in accordance with those in order to be a discretionary activity, that's correct, yes.

25 CHAIRPERSON: Yes. If there's a failure somewhere there, the status of the activity changes.

MR DAVIES: If those are imposed as consent conditions --

30 CHAIRPERSON: As well as.

MR DAVIES: As well as, then it would be a breach of consent conditions rather than a breach of a rule standard.

35 CHAIRPERSON: Why have them? Why would you have them?

40 MR DAVIES: Because you want to be absolutely sure that what you are getting, as part of this process, is a comprehensive set of conditions for the activity anticipated. I don't think I'm being -- I can state that simpler I think. It's to ensure that the activities which occur within the zone, and particularly, the site swap process, fits within a very narrow compass. Part of that is because it's managing the cumulative effects and preventing the possibility that King Salmon, or somebody else, would farm these sites in addition to the sites which are imposed to be given up. As a consequence, there needs to be some reasonably tight control over what might eventually occur from this process.

45

5 You did indicate that it was unusual. I think, in my opening submissions, I did refer to the Tasman Plan which has some analogue in the sense that it's the same structure that's proposed here, but in the main, the Tasman Plan is dealing with mussel farming and spat catching which is a far simpler exercise, conditions-wise, than salmon farming. Consequently, there's a substantial number of conditions here, whereas in the Tasman example, there are relatively few rule standards in the same way.

10 CHAIRPERSON: But then is there a consenting regime provided for?

MR DAVIES: There's controlled activity status and a discretionary activity status provided under the plan and then there's a resource consent process which effectively imposes those rule standards as consent conditions, as well as other conditions which aren't provided for in the rule standards. This enables, with a high degree of certainty at this stage, us to know what the consent will look like when that process is gone through. There's a high degree of control in the plan.

20 CHAIRPERSON: If the appendix D4 standards were all imposed as conditions of consent, if there were a breach, that would be a breach of the conditions of consent but also it would render the status of the activity a different status, wouldn't it?

25 MR DAVIES: If there was an attempt to vary or to apply for -- I think the status of the activity only is concerning when applying for a consent. Once you've got that consent, you're obligated to comply with the consent and if you're complying with the consent, then that's a defence under section 12, that is you can't operate in the coastal marine area unless you're complying with the rule of the plan or there's no permitted activity standards. Consequently, you would need to be applying with your consent.

35 CHAIRPERSON: You're saying that once the consent has been granted as a restricted discretionary activity, then the pre-requirement is fulfilled.

MR DAVIES: That's right. The activity status has an impact at the point of application for consent. Once you've got a resource consent, your primary obligation is then to either comply with the plan, and there are no relevant permitted activity standards, so, in this case, you would be required to comply with your consent. Any variation of that consent is a deemed discretionary activity in any event.

45 CHAIRPERSON: In any event, yes.

MR DAVIES: Irrespective of if it's controlled discretionary non-complying, the statute would deem it to be a discretionary activity in any event.

CHAIRPERSON: Right.

MR CROSBY: The only lacuna or gap really is that there's no linking in the policies of what you've been outlining. There's an assumption that that's going to occur, that the standards would be imposed as conditions of consent that one could fill that gap, I would assume, or are you suggesting by reference in the policies that consents that followed would be expected to apply the standards as conditions of consent?

MR DAVIES: I'm with Ms Ferguson. I would be saying it would be far better, for administrative purposes and all other purposes, to, in fact, have those as conditions of consent. Whether there's a requirement or not, I would be seeing that as entirely advantageous to have one document to which one would refer rather than having the appendix D4 as well as any additional conditions which were imposed in terms of the discretion. If there's nothing in the plan which expressly says it, perhaps it could, although I think, in practice, I would agree with Ms Ferguson that it ought to be done simply from a management perspective internally within King Salmon.

CHAIRPERSON: Right, now back to your written material.

MR DAVIES: In terms of the written material, King Salmon was asked to answer four questions and I propose to make some brief introductory comments and then to have specific witnesses who I name in these submissions give evidence in respect of them. Now the questions have been put on the website, and I'm not so sure you want me to read the entire question. Although maybe for the people listening, it would be helpful. Although, the first question is about water quality monitoring and essentially accuracy and reliability and, particularly, whether Crail Bay should have been included in that, although there is a question of accuracy and reliability more generally.

And so I first note at paragraph 3 that NIWA modelled the water column effects of the proposed salmon farms in the Pelorus Sound and they did so in a report which is on the website dated 18 October 2016. The figures used for the baseline are the amounts of feed that might be discharged under the consents, they are the existing consents. They are an attempt to model a real world, maximum production scenario in the context of New Zealand King Salmon's and Ngai Tahu's existing consents. Ngai Tahu have got a Hapuka farm in Beatrix Bay. So that's part of the model - just to explain that and give some context to that comment.

The basis for choosing that baseline is the Hawthorne line of authority:

"The existing environment includes the environment as it might be modified by the implication of resource consents which have been granted where it appears likely that those resource consents would be implemented."

5 There's a number of cases which flow on from that and I've summarised them very briefly. That needs to accord with the real world, that's Justice Fogarty's decision in Queenstown Central Limited and should not be approached as a statute. Again Justice Fogarty in Royal Forest and Bird Protection Society.

10 In that footnote 3, I do note there is an authority for the proposition that a partially implemented consent, as these all are, must be assumed to be fully implemented even when fully implementing them is fanciful. It's an Environment Court decision of Judge Kenderdine. I lost that case and I query in light of the later authority whether or not it still holds, but it is a potentially an authority for the proposition that a partially implemented consent must be assumed to be fully implemented. The leading --

15 CHAIRPERSON: They aren't partly implement consents, are they, the Crail Bay ones? They are fully implemented, they ceased?

20 MR DAVIES: Yes. But the consent is still extant, it could be started tomorrow.

CHAIRPERSON: But the activity has ceased.

25 MR DAVIES: That's right, the activity has physically ceased --

CHAIRPERSON: For some time.

30 MR DAVIES: That's right, yes. But they haven't been cancelled, they haven't expired, they haven't lapsed, they can't lapse, because --

CHAIRPERSON: They could be cancelled, though, by the council?

MR DAVIES: They could be cancelled, they haven't been cancelled.

35 CHAIRPERSON: No.

MR DAVIES: The council could seek to cancel them. Whether or not they would succeed, that's another question. But certainly they haven't been.

40 CHAIRPERSON: Well if they haven't been exercised for five years --

MR DAVIES: It puts them at risk of being cancelled.

45 CHAIRPERSON: Yes.

MR DAVIES: Except here, those consents are for a mix of salmon farming and mussel farming and mussel farming is occurring on those sites, so I'm not even sure whether or not they could be cancelled. Because the species which are permitted are mussels and salmon, and a number of other things, if I recall correctly, and as a consequence, they--

[12.00 pm]

CHAIRPERSON: They're not exclusively salmon farming?

MR DAVIES: That's right, so I'm not sure. There may be bits of consents which are exclusively salmon farm consents, but certainly there is a series of consents available there and, if I recall correctly, they anticipate a degree of polyculture. And the reason why I say that is, in terms of option 1 on the MFLO48 consent and the MFLO32 consent, there is roughly eight lines of mussel farms and then there's two of those lines of mussel farms have been removed and there's a row of salmon pens, which were small circular pens which Pacifica used. And so there was always intended to be a degree of polyculture. And, if I recall correctly, those sites have been currently used for mussel farming. So I'm not sure that they actually could be cancelled. And, of course, there's a process to be gone through to achieve that.

So, back to paragraph 7 of my written submissions. The leading decision is the Far North District Council v Ngāti Kahu and I've quoted two parts from Ngāti Kahu which I think for simplicity I'll just read:

"As this Court noted in Hawthorne, the consent authority will frequently be aware that the environment existing on the date of consent is granted is likely to be significantly affected by another event before implementation. In its plain meaning and in its context we are satisfied that the environment necessarily imports a degree of futurity. The Consent Authority is required to consider the state of the environment at the time when it may reasonably expect the activity, that is a subdivision, will be completed."

And then the Court of Appeal goes on to note:

"In this respect we note this Court's statement in Hawthorne to the effect that it is permissible and it will often be desirable or even necessary for the Consent Authority to consider the future state of the environment. However, that observation does not affect our conclusion. The Court was simply recognising that a consent authority would not always be required to consider the future state of the environment, but as the Court expressly recognised, it would be contrary to 1041A for a consent authority not to take into account the future state of the environment where it is satisfied that other resource consents would be put into effect. This is such a case."

5 The first observation is that Hawthorne and its subsequent cases are almost all, but I'm wondering if that Queenstown central case, in fact, was a plan change case, but certainly the majority of them concern resource consent applications and, obviously, this is an application of a 360A and is more akin to a plan change case.

10 In my submission that does not matter. The environment in this context is the environment referred to in section 5(2)(c). It is the context in which this plan change must be considered, at least until the expiry of the existing consents in 2024 and 2049.

15 The reason for King Salmon including the Crail Bay farms in the model is because Crail Bay farms remain under active consideration as a potential smolt site and Grant Lovell will give supplementary evidence on this point. In paragraph 11 I state:

20 "The primary comparison is between scenario 1 and scenario 13. Scenario 13 is the maximum production scenario which, as Mr Lovell will note, goes beyond what is contemplated as a restricted discretionary activity under the proposed plan provisions. It is reasonable to compare such a scenario against the comparable scenario under current consent conditions."

25 So effectively I'm making a submission that if you're going to consider a maximum scenario in the future you should consider that against a maximum scenario now. And Ben Knight has in fact estimated the additional difference, had the baseline being the actual current discharge levels, rather than the future levels. And he considers the difference, which he estimates to be 30 per cent does not substantially change the results.

CHAIRPERSON: We're going to hear from him, aren't we?

35 MR DAVIES: You are, yes.

All I'm doing here is setting the legal context and then you're going to hear from the individual witnesses yourself.

40 CHAIRPERSON: Yes. Thank you.

45 MR DAVIES: In terms of the disclosure of mortalities, question 2 stated a series of assertions which had been made, both in relation to particular events, whether adequate information had been provided to Dr Diggles, and there was a suggestion that King Salmon and/or the reports did not properly identify and record the actual causes of continuing high rates of mortalities.

I simply state that the assertions are inaccurate. Mr Mark Preece gave candid evidence to you about fish health issues, Dr Diggles was provided with all relevant information and Dr Colin Johnston will address you on this point further.

5

Light levels. The third question which King Salmon were asked was to respond to an assertion that the increase in chlorophyll a levels caused by the discharges would have an effect such that light levels available for foraging king shags on the sea bed would be substantially reduced. King Salmon has asked Ben Knight to respond to this point. As I understand it, MPI have asked Niall Broekhuizen to also respond and, with your leave, I think it's probably best that they would come up together --

10

15 CHAIRPERSON: Yes.

MR DAVIES: -- and I'll ask Mr Ben Knight to comment and then Mr Broekhuizen can also comment about that. I'll summarise the points as I understand it and then make a legal submission after that.

20

The first point in response to Mr Schuckard's analysis is that chlorophyll a is not the main factor affecting light attenuation in the Marlborough Sounds. Suspended sediment is.

25

The second point is that the changes in light effect and abundance, discussed by Mr Schuckard, are significantly greater than those predicted by the modelling work of Dr Broekhuizen. The change in concentration of phytoplankton in the Waitata Reach under scenario 13 will be less than, and this is an average figure, less than 0.4 mg of chlorophyll per cubic metre. Applying Mr Knight's correction to use a more conservative baseline, that would increase to less than 0.05 mg of chlorophyll per cubic metre and Mr Schuckard has assumed a change of 1 mg of chlorophyll per cubic metre. Mr Schuckard has used a rate of light attenuation derived from Antarctic waters which have exceptional clarity and applied those to the Marlborough Sounds. That is inconsistent with light attenuation data collected by the council and New Zealand King Salmon, which was not used or referred to by Mr Schuckard. Due to other dominant causes of light attenuation the consequences of any increased phytoplankton will be difficult to measure.

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40

Mr Schuckard has assumed a lux level of 100, whereas light levels under a summer overcast sky is around 1,000 and in bright sunlight can exceed 30,000 lux. It is only summertime concentrations which are relevant, because in winter the near surface chlorophyll concentrations increase by up to a mere 0.002 mg of chlorophyll per cubic metre, or 0.003 mg of chlorophyll per cubic metre, if Mr Knight's correction to a more conservative baseline is used. And, of course, those are average figures.

45

5 Finally, modelling indicates that close to the sea bed there will be less chlorophyll and less additional chlorophyll caused by the farms. The assumption by Mr Schuckard that chlorophyll concentrations will remain constant with depth will overstate the effect that chlorophyll and farm derived chlorophyll has on light attenuation near the seabed.

10 There's a couple of points arising out of that, which I wish to make. The 3.5 mg chlorophyll per cubic metre limit for the concentration of chlorophyll is part of a suite of management tools. The purpose of that particular measure is to prevent algal blooms being caused by the salmon farm operation. It is not a target for New Zealand King Salmon to reach. New Zealand King Salmon is unlikely to be able to discharge the quantities of feed modelled in scenario 13. It would only be achieved after at least 15 years of additional monitoring and stage development. The rule standards in matters of discretion require appropriate monitoring plans to be devised, specifically to address chlorophyll concentrations and water clarity. The eventual conditions of consent will ensure that there are in New Zealand King Salmon's view overly conservative caps on feed increases, which have been ignored by Mr Schuckard.

25 It is safe to conclude in terms of policy 11 of the NZCPS that adverse effects will be avoided. I firstly state that because there is a more than adequate evidential foundation and that will be provided by Ben Knight. We have a good set of baseline information collected by the Marlborough District Council and New Zealand King Salmon from 2012 to which New Zealand King Salmon will be adding further information. The relationship between nitrogen and chlorophyll is well understood. Properly analysed, there is little uncertainty, especially at 30 initial feed levels and the effect in terms of section 3 can only be a potential effect of low probability which has a high potential impact. Yet, before any high potential impact occurs, we will be accurately able to measure and any consent will require an adaptive response to any effect which the farms are having. In that way, any adverse effect is avoided before it occurs.

40 You will note that I have not resorted to the argument that the effect is minor and that word is in the context of the Supreme Court decision:

"It is improbable that it will be necessary to prohibit any activity that has a minor or transitory effect in order to preserve the natural character of the coastal environment."

45 I prefer to make the argument that, managed in this way, the change is not an effect and certainly not adverse. In saying that, I rely on the evidence demonstrating that there will be no material impact on the habitat of the king shag.

I guess in a cartoon sense what I'm saying here is that the suite of rule standards, which I've just said would become conditions of consent -- the rule standards which are opposed here would stop there being a problem before the shag noticed it. And essentially that's the long and the short of what I'm making this submission.

Moving on to the fourth question, the McGuinness Institute - I took this question as referring to the McGuinness Institute - a number of varying figures have been challenged before the Panel in respect of the like for like swap and I myself have gone and looked through the MPI figures. And the MPI figures are, with one exception, correct. The position is set out in the table below. So the differences here are around the Crail Bay 48 and 32. And I'll come back to those differences and explain why they're different. And I don't think it's necessarily strictly relevant, but the Clay Point figure is also incorrect, and I'll come back to that.

Firstly, what's happened with the McGuinness Institute figures, in terms of Crail Bay. Firstly, the 32 and 48 figures have been transposed, so when the McGuinness Institute refers to MFL032, they are in fact intending to refer to MFL048 and vice versa. Then making that correction, they have then incorrectly assessed the area of MFL032. And they've done that because both MFL032 and its extensions and MFL067 and its extensions have been given the same site number by the Marlborough District Council. That is site 8515. The McGuinness Institute is correct that the total area of site 8515 is 13.199 hectares or 13.2 hectares.

[12.15 pm]

But what's been overlooked is that in fact the salmon farming consent only applies to the 7.788 hectare area and not the 5.411 hectares. So it only applies to area A and not to area B. And so that accounts for a substantial amount of the difference between the MPI document and the McGuinness Institute document, in that they have assumed that site 8515 has consent for salmon farming, whereas in fact its only MFL032 and its extensions which do.

And the final error is in respect of MFL048, and this is an error both in the McGuinness and also in the MPI material. If you turn over the page, it's best illustrated in the diagram. King Salmon owns the 1.09 hectare extension to MFL048 but it only has consent in respect of that area for mussel farming. It has consent over the parent, LI48, that is the 4.5 hectare area, which has the light line border around it, and as a consequence relevant to this matter, the only area which is relevant is the original MFL or licence 48 and not the 1.09 hectare extension.

5 There is one further error on the table which the McGuinness Institute has prepared and that is in respect of Clay Point, which probably matters not in terms of this process. The McGuinness Institute has that site as being 31 hectares. It is in fact 19.644 hectares, and you can see that's the figure in brackets, which is the total figure within that 2016 diagram.

MR DORMER: 19.4?

10 MR DAVIES: 19.644. So there's a figure in brackets which is the 16.494 plus the 3.15 is 19.644 hectares.

MR CROSBY: And on that diagram is it the surface structure in the 3.15?

15 MR DAVIES: That's the surface structure area. That is the place where the surface structures must be within, if I recall correctly, 2 hectares of surface structures is consented at that site. But King Salmon's given a 3.15 hectare within which it must place the surface structures. So it's described as the net pen area boundary. In fact, to be absolutely correct, that is the location in which they must place the net pens, so in theory
20 the barge could be outside of that, for example.

25 The rest of the question asked why are we focusing on surface structures, why aren't we focusing on the total area. And what I propose to do in the next paragraph and a half -- or paragraph is defend that decision, essentially.

30 The focus of the exercise has been on not increasing the amount of surface hectares allocated to salmon farming in the Marlborough Sounds, the shift to deeper water and to sites with higher current flow will inevitably result in greater area being required for more of it. It's simply a question of physics. However, it is the surface structures and not the moorings which create the principal adverse effects.

35 Moorings have little impact on landscape, in terms of natural character. Moorings do not effect natural elements or processes, but protect the benthos beneath them from other activities. The effects regarding to discharge do not arise from the moorings. In terms of navigation, all farms are required that moorings be no more than 4 metres below the
40 surface of the water when measured 20 metres from the surface structures. In a practical sense, for anything other than submarines, navigation is possible in all locations apart from a matter of metres from the surface structures, and therefore, the focus on consented surface structures is appropriate in that context.

45 MR CROSBY: Right, thank you.

MR DAVIES: So, unless you have any further questions of me I propose to call Grant Lovell.

CHAIRPERSON: Thank you.

5 MR CROSBY: Mr Davies, as a matter of record only, I don't have any other issue, in paragraph 9 you made a comment at the end:

"... the contents in which this plan change must be considered at least to the expiry of the existing consents in 2024."

10 I understood the Ruakaka one was 2021.

15 MR DAVIES: That's correct. But the reason why I've referred in this context to 2024 is that we are looking at the Pelorus water column monitoring. And that was the question that was asked, so that is why I've referred to 2024 in that context.

MR CROSBY: Thank you.

20 (off mic conversation)

25 MR DORMER: I've just had a quick look at my notes on your opening address yesterday. I thought it was there, or maybe I didn't note it, whatever. I understood you to acknowledge that subsequent to the King Salmon case, if a proposed salmon farm has an adverse effect on an area of outstanding natural landscape then it cannot be approved.

30 MR DAVIES: As a result of the NZCPS avoid policy and the Supreme Court decision, if a proposed salmon farm has an adverse effect on the environment, which is more than minor or transitory, which comes back to that quotation which I gave from the Supreme Court, then it cannot be approved. And that was the outcome in the Papatua site in the Supreme Court case. Of course, in this case, it's a question of what the values are and going through that analysis to work out what is adverse and what is an effect and then going through that process. But that's correct, as a result of the King Salmon decision an adverse effect on an outstanding natural landscape results in a refusal of plan change.

MR DORMER: Thank you.

40 CHAIRPERSON: Right, Mr Lovell.

MR LOVELL: Good afternoon. I'm addressing question 1 in relation to the baseline model at Crail Bay. I was asked by Niall to provide the amount of feed which might be discharged under the current consents. The corrected baseline model is figures that are the maximum consented figures over 5 12 months, but that has been extrapolated over the 18, although the model is closer to 19 months, for that requirement. We have a table there that does list that on a 12-month basis that all of those figures are just in or around at their maximum consents. It does for the EPA sites, Waitata Reach, Kopāua and Ngamahau, put them at their future 10 consented levels, so 6,000 and 4,000 tonnes respectively.

In relation directly to Crail Bay, although this site is currently fallowed and has been fallowed since 2011, New Zealand King Salmon has obtained an additional resource consent for licence MFL48 and that is 15 to allow us to move current pen infrastructure to this site. So the original consent only allowed for circle farms. We had this altered to allow for square pens structures to be put in place. If this process does not go ahead we will require an additional smolt farming site in the future to maintain our single year class and, therefore, it is highly likely that we will reopen Crail Bay and start farming it again. 20

So, for that reason alone, we do believe it is entirely appropriate that it is included in the analysis.

25 CHAIRPERSON: But would a smolt site have the same intensity and so forth as a salmon farm?

MR LOVELL: A smolt site would actually have a large number of fish, so we would farm it most likely over about a six to eight-month period and the exact feed discharge, obviously, I couldn't give you an exact figure on that 30 now, it would be within consented levels, but we would grow the fish to 1.5 kg before towing them out to one of the ongoing sites in the Waitata Reach. In terms of the actual farming and intensity, you can place a significantly large number of fish on site for a short period of 35 time. It is not as intensive as a grow-out site, purely because the amount of discharge will be significantly lower.

But the question of should we include it because we're not currently farming it? Our response to that is that we will farm it if this process 40 does not go ahead.

CHAIRPERSON: If what?

MR LOVELL: If this site process does not go ahead, we do have intentions of farming Crail Bay. 45

CHAIRPERSON: Oh, right.

MR LOVELL: In terms of the feed levels that are in all the other scenarios there, the continuity of feed are calculated using an integrated planning tool. Therefore, when the model is changed, all the impacts, all the other sites, may receive more or less feed depending upon how the model works and timing of items such as harvest, harvest size, mortality rate within the model. But these are very high level models done over a relatively short period of time and they are designed to approximate the level and timing of the feed discharge. So, although the figures given in this particular hearing are listed as over a 585-day figure, or a 12-month figure, the models are actually calculated down at a daily level.

Because of this we would expect to see quite a bit of variation in the overall totals and also on a month to month basis. As I said to you in my primary evidence, the farms are not set up as independent units, they are all planned in an integrated fashion.

Additionally, for scenario 13 the theoretical maximum, the total projected feed volume in this for the mid-Waitata site, which was nearly 16,000 tonnes over the 18-month period, is actually significantly greater than the maximum volumes that have been put through in this proposal, so we would never be able to reach that.

And lastly, as Quentin made quite a lot of note to, under the proposed adaptive management regime, especially in regard to the total Pelorus adaptive regime where it slowly increases, there is an additional level of insurance in relation to any potential impact, because it will take a minimum of 15 years to reach a level which is under scenario 13.

[12.30 pm]

CHAIRPERSON: You've got 7,000 tonnes there, it's six, isn't it?

MR LOVELL: For the Waitata Mid Reach? I believe it starts at 3,500 and slowly increases over a 15-year period.

CHAIRPERSON: But the overall is six for three years?

MR LOVELL: The overall for the initial is six for three years. That is correct. But in terms of the final maximum totals it is 7,000 tonnes, which is obviously for the 18th month.

CHAIRPERSON: That's scenario 13?

MR LOVELL: Scenario 13, correct. Yes, so the modelled scenario 13 is greater than anything we could actually achieve under this proposal.

CHAIRPERSON: Yes. Have you got any questions?

MR CROSBY: Just two questions, if I can, Mr Lovell. Do I take it that the 2014 consent was purely and simply to change the form of the surface structure from circular to square pen?

5 MR LOVELL: That is correct.

MR CROSBY: Did MFL32 already have a consent for square pens?

10 MR LOVELL: No, the consent was only for MFL48 at this stage.

MR CROSBY: Right.

15 MR LOVELL: So the original plan is MFL48 and then we would -- I'm not 100% sure actually on the exact details of the consent for MFL32 and whether or not square structures are currently allowed. I'm sure Quentin or Mark would be able to inform me.

20 MR CROSBY: But the intent that you were saying, in terms of requiring having a smolt site, your comments in this evidence are related solely to MFL48?

25 MR LOVELL: Solely to MFL48 in the short term. I would suggest that longer term, we would undergo the same process for MFL32 as well, if this does not go ahead. The feed discharge levels at the new EPA sites will reach over the coming years -- so currently Waitata is at 3,000 tonnes and Kopāua, 1,500 tonnes. They do have the ability to slowly move towards 6,000 and 4,000 tonnes over quite a long period of time. To maintain single-year-plus farming we will require almost certainly both of those sites.

30 CHAIRPERSON: When do the consents expire on those sites?

MR LOVELL: Sorry, I do not know the answer to that question.

35 CHAIRPERSON: Isn't it 2024?

MR DORMER: 2024.

40 MR LOVELL: Yes, 2024.

CHAIRPERSON: So you've got six years?

MR LOVELL: Six years. Yes.

45 CHAIRPERSON: Well, really effectively seven years, but ... yes.

MR LOVELL: Seven years of use and a potential renewal.

CHAIRPERSON: So you're saying if this proposal doesn't go ahead you're going to start --

MR LOVELL: MFL48 --

CHAIRPERSON: -- smolt salmon farming next year or this year?

5

MR LOVELL: Potentially not this year, but within the next three years.

CHAIRPERSON: Within the next three years.

10 MR LOVELL: Yes. So that would be linked in with feed-discharge increases coming through the farms in the Waitata Reach. So the Waitata farm has its first potential feed-discharge increase in -- it would've been for -- after next year. So that would be three -- our new farms are set up with feed-discharge increases after three years, assuming we meet certain criteria.
15 The Waitata Reach farm has the potential to increase after next year's production, which is -- in terms of fish numbers and planning that is quite significant. That moves us from -- that adds 33 per cent to the volume of that particular site. The Kopāua farm is the following year after that, and that is moving up in 500 tonnes.

20

CHAIRPERSON: Now, of course the Crail Bay sites are not subject to the benthic guidelines, are they?

MR LOVELL: They are not Board of Inquiry sites, and so they're not under the exact same EPA things. But they are certainly subject --

25

CHAIRPERSON: No, I'm talking about the benthic guidelines that were established.

MR LOVELL: They are subject to environmental impact consents, of course, and even without having specific benthic guidelines, they need to be maintained on a level that is suitable for a farmer.

30

CHAIRPERSON: But they haven't been.

MR LOVELL: I'm unable to comment on the previous ownership of the sites. They were purchased by us, and we only farmed them for a short period before closing.

35

CHAIRPERSON: Yes. Okay. Well, they weren't run along the benthic guidelines anyway.

40

MR LOVELL: They were certainly not run under best-management practice guidelines, no.

CHAIRPERSON: No. No.

45

MR DORMER: They haven't been run at all for some time.

MR LOVELL: No. No. They have been fallowed since 2011.

- CHAIRPERSON: Yes. All right. Thank you, Mr Lovell.
- MR LOVELL: Thank you very much.
- 5 MR DAVIES: I've got a copy of the 2013 consent decision if you wish to have a copy of it.
- CHAIRPERSON: What was that?
- 10 MR DAVIES: I'll come up to the microphone, actually. I've got a single copy of the 2013 consent decision which enables the four different types of pens on MFL048. If you want to receive that -- I'm aware that you're getting so much paper that you perhaps don't want another piece of paper, but --
- 15 MR CROSBY: No. No, but we should have it.
- MR DAVIES: So I'll provide it to you. I can say that, while it doesn't directly implement best-practice guidelines because it postdates -- sorry, predates the best-practice guidelines, the conditions have a number of elements which are consistent with the best-practice guidelines, such as insuring that the consent is only farmed up to ES5. It's not identical, but it's a close analogue.
- 20
- 25 CHAIRPERSON: Yes, if you could get -- I think we should look at that.
- MR DAVIES: There's also a mass of consents around all those farms, and it's a little bit complicated to find, so it's probably easier I do give it to you.
- 30 CHAIRPERSON: Thank you.
- MR DAVIES: I call Dr Colin Johnston, please.
- 35 CHAIRPERSON: Yes. Dr Johnston, thank you.
- DR JOHNSTON: Good afternoon, gentlemen. As you haven't seen me before I have prefaced my evidence statement with my background and qualifications.
- 40 CHAIRPERSON: Yes.
- DR JOHNSTON: I can read through that if you wish.
- 45 CHAIRPERSON: No, there's no need for you to do that, thank you.

DR JOHNSTON: Thank you. For the sake of brevity and modesty that's appreciated. So I will start at paragraph 10 on page 3 and confirm that I have read and I am familiar with section 7 of the Environment Court Practice Note 2014 which relates to expert witnesses. I agree to be bound by that code of conduct, and confirm that I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express in this evidence, and the evidence I give is within my expertise, therefore that context indicates otherwise. Paragraph 11 just refers to your fourth minute of your panel.

CHAIRPERSON: Yes.

DR JOHNSTON: And paragraph 12 details the question that was asked around the transmission of information to Dr Ben Diggles for his risk assessment, the causes of high rates of mortality and their significance in terms of sustainability of salmon farming or terms of risk to other fauna. So I just want to address that, if I may. So paragraph 13, I have read the report of Dr Diggles dated the 7th of September 2016, it being an updated disease risk assessment report, relocation of salmon farms in Marlborough Sounds in New Zealand based on the risk assessment he presented to the Environment Protection Authority Board of Inquiry on the new salmon farms in the Marlborough Sounds. Since that time I note the inclusion of information on the New Zealand rickettsia-like organism in the updated report, which was an organism identified in-between these two processes. I have also read a selection of transcripts, presentations and submissions that refer to concerns over fish health, and note that in my expert opinion many of the conclusions are misguided, although the desire for better fish health outcomes is one we do all espouse.

I have, in preparing this evidence, also spoken with the Ministry for Primary Industries and was provided with written information indicating that the MPI had informed Dr Diggles of elevated mortalities, the discovery of the New Zealand RLO, and its presence on more than one farm site. I also believe that you will have received a letter from Dr Diggles confirming this. I also had a professional conversation with Dr Diggles regarding elevated mortalities, the range of causes of mortalities on the farms, and the discovery of the New Zealand rickettsia-like organism and another bacterium, *Tenacibaculum maritimum* during his development of the updated risk assessment and subsequently in preparing this evidence. As a result, I am satisfied that Dr Diggles was fully aware of elevated mortalities, the various causes of those mortalities, and the presence of NZRLO on more than one farm site.

Paragraph 16, the mortalities over summer were on the low-flow sites, particularly the summer of 2014/15 and 2015/16, have indeed been more than those which might be expected under normal ideal farming conditions. The drivers of the elevated mortality rates are, however, multifactorial. They include enteritis, which is inflammation of the gastro intestinal tract, upper gastro intestinal tract dysfunction, being bloat, external skin damage from stinging organisms, and late rundown of summer the fish. All of these are exacerbated by generally poor environmental conditions seen at low-flow sites. Yes, sir?

5

10

MR DORMER: When you were reading the third line there --

DR JOHNSTON: Yes.

15

MR DORMER: -- you referred to what might be expected under normal ideal conditions.

DR JOHNSTON: Yes.

20

MR DORMER: Which would you prefer to be your evidence?

CHAIRPERSON: Normal or ideal?

MR DORMER: Or both?

25

CHAIRPERSON: Or both?

DR JOHNSTON: I'm just referring to what one might expect --

30

MR DORMER: It's a very simple question, Dr Johnston.

DR JOHNSTON: Yes.

35

MR DORMER: Do you prefer your written text --

DR JOHNSTON: Oh, sorry.

MR DAWES: -- or do you prefer your earlier proposal?

40

DR JOHNSTON: Okay. Sorry, I'm just -- no, I'm happy with the written text. That's fine.

CHAIRPERSON: Right.

MR DORMER: I was going to ask you what normal ideals --

45

DR JOHNSTON: Yes. Sorry.

MR DORMER: I would've thought that would've been oxymoron.

DR JOHNSTON: Where was I?

CHAIRPERSON: Ruakaka Bay, I think.

5 DR JOHNSTON: Yes. Paragraph 17, Ruakaka Bay farm over the summer of 2016/17
did not show significantly elevated mortalities above that expected
Chinook farming. Not only were environmental conditions more
10 benign in terms of a lack of extended periods of warmer water, but the
company had also introduced an oxygen-injection system, which
ensures a greater supply of oxygen in terms of milligrams of oxygen
per hour to the farm than that delivered purely by the relatively low
flow of the sea water, a mitigation measure that may be mirrored by the
15 placement of the same farm in a higher-flow site. I wish to move on
just to look at the NZRLO and its significance.

15 Paragraph 18, in considering the relevance and importance of the
NZRLO in terms of fish health and resultant bio-security risk, the
following are pertinent: the primary screening diagnostic test for
20 NZRLO is a quantitative polymerase chain reaction test, QPCR, that
detects nucleic acids from the NZRLO. This test is both highly
sensitive and highly specific. As such it can detect NZRLO at very low
levels. The presence of NZRLO does not necessarily equate with
clinical disease. There are good indications that NZRLO infection does
25 not result in acute, severe clinical outbreaks of disease, known as
epizootics. Molecular evidence of NZRLO is not found in all
mortalities, ie it is not a necessary cause of mortality. NZRLO has been
isolated purely from skin lesions of many fish and not from the kidneys
of those fish, indicating that infection does not necessarily result in
30 circulating infection or septicaemia.

[12:45 pm]

35 NZRLO is found to be present in less than 50 per cent of early skin
lesions, indicating that it is not a necessary cause of skin lesions in the
New Zealand presentation. In the New Zealand presentation very few
pathognomonic lesions in the liver are noted in mortalities, indicating
that pure, classical clinical infection resulting in mortality can rarely be
40 confidently attributed to the organism. A genetically similar rickettsia-
like organism was discovered in Tasmania in 2005. A vaccine was
subsequently developed, but has never been commercially used
because the Tasmanian RLO did not produce enough clinical impact to
warrant the use of the vaccine. The limited number of clinical cases
occur only in the face of a common stress factor.

5 Brosnahan et al 2016 stated that the MPI considers that NZRLO is not considered to be the primary cause of mortalities in these fish. Given these findings, it is entirely appropriate to consider that any risk represented specifically by the presence of NZRLO is very low and may be addressed by improving the environmental conditions. This is in complete agreement with the conclusions of Dr Diggles. There is no justification, either, for linking the presence of the NZRLO in salmon farms to the occurrence of a rickettsia in scallops in the Marlborough Sounds. There are at least eight genus level lineages of rickettsiosis and two main players just within the rickettsia genus. Rickettsiosis and rickettsia-like organisms have been reported from 98 per cent of scallops in the Marlborough Sounds and 81 per cent from Coromandel waters in a survey in the year 2000. Organisms from both the North and South Island were further characterised in 2002. These organisms are ubiquitous in New Zealand scallops, present microscopically differently to NZRLO, and are unequivocally different organisms to the NZRLO.

20 In terms of long-term sustainability and risk to other fauna in general, Dr Diggles indicates in his updated risk assessment that improving the farm environment by moving from low-flow sites to high-flow sites will have general benefits for fish health and reduce bio-security risk to fauna external to the farms. I reach the same conclusion as Dr Diggles, namely that in comparison to low-flow sites a move to high-flow sites would result in improved fish health and bio-security outcomes. I would like to explain why I reach that conclusion and have set out my reasoning in appendix A. And I will be at your complete disposal to go through appendix A if you wish, or you may wish to save it for some reading during your deliberations.

30 CHAIRPERSON: We were going to adjourn at 1 o'clock anyway. We will adjourn now. We'll have a look at this. I'm sorry; we'll have to ask you to stay. And then we're going to have Mr --

35 MR DAVIES: Mr Knight.

CHAIRPERSON: -- Knight.

MR DAVIES: And Niall Broekhuizen.

40 CHAIRPERSON: Yes. Yes. So, we'll resume at 1.45. Thank you. Thanks.

ADJOURNED [12.48 pm]

[1.47 pm]

CHAIRPERSON: Right. Dr Johnston, I think Mr Dormer has some questions for you.

- MR DORMER: Good afternoon. Thank you for coming. In paragraphs 26 and 27 you say that moving the fish from low-flow sites to high-flow sites will, on its own, make the outbreak of disease less likely. I think some folk have suggested to us that the mere fact of having more fish, which these proposals contemplate, is likely to increase the risk of disease. What would you say to that?
- 5
- DR JOHNSTON: If population numbers increase - if I can refer you to the equation on paragraph 30 - then invariably, yes, it does increase. That's the number of susceptible hosts so, therefore, that does produce an upward pressure on R_0 ; correct.
- 10
- MR DORMER: I'm not very good with maths, forgive me.
- 15
- DR JOHNSTON: Sorry. So, we increase the numerator so the potential for disease replication does increase; correct.
- MR DORMER: Yes.
- 20
- DR JOHNSTON: It's not a simple linear relationship because what we actually see on our water are called threshold population sizes and they are a factor, they're a constant, for different pathogens. We don't know exactly where those lie in absolute numbers and so what we see is if one is contemplating increasing population size, you may have a very large margin for increasing population size before you hit threshold population size, or there may be a smaller or you may have already exceeded them. So my position on that when people wish to increase population size is to have a sensible step-wise approach, maintain one's health monitoring programme, and be ready to act where necessary on that but you can't predict. There may be no effect or there may be an effect.
- 25
- 30
- MR DORMER: You used a mathematical expression with which I was vaguely familiar. You said that the population increases then the potential for disease increases but it's not a simple progression. What was your --
- 35
- DR JOHNSTON: I said it wasn't particularly linear.
- MR DORMER: Thank you. Do I take it you're suggesting that a sensible step-wise approach should be sufficient to elevate concern?
- 40
- DR JOHNSTON: Combined with continuing health monitoring of the population, yes.
- MR DORMER: Okay, and the next one. We've had a couple of years recently of high mortality in one or two of the farms. Has that led to any decrease in the health of other species?
- 45
- DR JOHNSTON: There have been no reports of any adverse impact on other species, no.

MR DORMER: Would you have expected there to have been such reports had there been adverse impacts?

5 DR JOHNSTON: Not always. Where effects are small or subtle, mortalities or otherwise in wild populations may go unnoticed. The Ministry for Primary Industries does operate its' 0800 exotic disease hotline and it does receive calls on that. I'm not party to how many it does receive or whatever but I do know from assisting in the occasional investigation that moderate numbers of mortalities in wild stocks are notified and investigated.

10

MR DORMER: It's all right. I'm just thinking how to put my next question. If I were your counsel and I were to ask you this question I'm sure the judge would accuse me of leading but I can't think of any other way of putting it. So, despite these very high mortality figures which we've seen in a couple of instances, are you aware or unaware of any adverse impacts on other fish stock?

15

DR JOHNSTON: As far as I'm aware there have been no reported adverse impacts.

20

MR DORMER: Thank you, Dr Johnston.

MR CROSBY: Just one question, Dr Johnston. Paragraph 17, if you would, in your evidence. In the first two lines there, you made the statement that the Ruakaka Bay farm over the summer of 2016 and 2017 did not show significantly elevated mortalities above that expected in chinook farming. What do we expect in chinook farming as in mortality level?

25

DR JOHNSTON: So our whole of life from transfer could be in the region of about 20 per cent.

30

MR CROSBY: So, does that mean that one has to anticipate that in salmon farming there's a 20 per cent per annum or up to --

35 DR JOHNSTON: Twenty per cent from transfer to harvest which could be 18 months, could be 24 months.

MR CROSBY: Right. Thank you.

40 CHAIRPERSON: Thank you very much, Dr Johnston. Now before we continue, Mr Davies, because you've got two other people ... Is Mr Fowler here? Oh, yes, he is. How are you going for time?

45 MR FOWLER: Well, I had been asked to put aside the whole day so I'm very comfortable just to continue with what suits the Panel.

(off mic conversation)

- CHAIRPERSON: Because we may have another ... I don't know. How long do you think we'll be? All right, thank you. All right, Mr Davies.
- 5 MR DAVIES: Thank you. If I could ask Ben Knight and also Dr Broekhuizen to ...
- CHAIRPERSON: Right, now, we have ...
- 10 MR DAVIES: You should have a new piece of paper with the heading "Court" on the top.
- CHAIRPERSON: Yes, I have.
- MR DAVIES: I suggest beginning reading the middle of the second page.
- 15 CHAIRPERSON: So, you're Mr --
- MR KNIGHT: Ben Knight.
- CHAIRPERSON: Ben Knight, yes.
- 20 MR KNIGHT: Yes, Mr Ben Knight.
- CHAIRPERSON: And you're Dr Broekhuizen; correct?
- 25 DR BROEKHUIZEN: I am, yes.
- CHAIRPERSON: So how do you want to do this? Will Mr Knight read his evidence?
- 30 MR DAVIES: If Mr Knight reads his evidence and then Dr Broekhuizen will read or summarise anything ...
- CHAIRPERSON: All right. Is that okay with you? Right, thank you. I don't suppose we've got the sound system working now, have we? It is? All right. Yes, I think if we start at key review findings would be satisfactory, thank you.
- 35 MR KNIGHT: Thank you and apologies if anything is not clear. I've got the same affliction with a lot of people in this room.
- 40 CHAIRPERSON: You've got a cold?
- MR KNIGHT: A bit of a cold.
- CHAIRPERSON: Okay.
- 45

MR KNIGHT: So just to start off with review findings. I've sort of divided this up into key factors, the most important which Quentin has already identified earlier was that the magnitude of change discussed in Mr Schuckard's evidence for chlorophyll was quite large and, yes, so that was one of the key findings I had. I'll just read directly from my notes probably.

CHAIRPERSON: I think if you start from the middle of the second page. We've noted your statement at the beginning.

[2.00 pm]

MR KNIGHT: Oh, thank you.

"There are many factors that affect light attenuation in the marine environment. Phytoplankton and associated chlorophyll a is not likely to be the main driver in this system. I've looked at data collected by Marlborough District Council as provided to me by Dr Neil Broekhuizen. This highlights clear differences in the light environment between the inner and outer Pelorus Sound with much clearer water observed in the outer Sound. While some differences may be related to phytoplankton populations, the primary driver for these differences appears to be other particulate material, other living and non-living matter, measured as total suspended solids. To illustrate this, figure 1 shows a satellite image of reflected light from Pelorus Sound which highlights the effects of suspended solids from the Pelorus River on the light environment of the inner Sound."

If you turn over the page, there's a satellite image there from 2015 during the summer, 13 February, and you can just see the gradient from the bottom left-corner where the Pelorus River comes into Havelock, sort of leading out through the Sound to the outer areas which are a much deeper blue if you have a coloured version. So, this really just highlights that graduated change in the light environment in the region. As Mr Schuckard points out some of that will be due to chlorophyll but there's also a lot of other factors. Point 2 on page 3:

"Changes in phytoplankton abundance discussed by Mr Schuckard are greater than predicted by the modelling work shown in Dr Broekhuizen's modelling report. The main report that Mr Schuckard makes is that a large change in chlorophyll a, for example a doubling from one to two chlorophyll a per/mg of chlorophyll a per cubic metre could have an effect on deep feeding visual hunters such as king shag. He also discusses a water quality threshold which is currently set at 3.5 mg per chlorophyll a per cubic metre for farms granted under the Board of Inquiry process. While the threshold is a practical level for instituting management actions due to the large natural variability, it seems unlikely that changes of this magnitude would be realised for extended periods of time in the main channels where the majority of the monitoring occurs.

5 I note that phytoplankton blooms of greater than 3.5 mg of chlorophyll a per cubic metre may occur for weeks or months inside embayments and may be common, naturally occurring events in both Sounds. The modelling work undertaken by Dr Broekhuizen suggests that relatively small changes in chlorophyll a of less than 5 per cent will result from the highest proposed feed scenarios considered in his modelling of Pelorus Sound.

10 I was responsible for reviewing the modelling work of Dr Broekhuizen and noted many factors that could affect model accuracy. These factors are not unique to this model and occur in any model where trade-offs in complexity are required. Nevertheless, I still see the model as the best available tool for predicting potential widescale effects of the proposal.

15 A concern in my review was that the baseline scenario in Pelorus Sound with respect to the fish farm feed inputs was higher than present levels in the region. Using information available in the model report, I calculated what I considered to be a more realistic baseline. This would increase the magnitude of increases in total nitrogen concentrations from 1.67 per cent stated in the report to 2.23 per cent; an increase of about 30 per cent. In my opinion, this level of change would not substantially affect the conclusions of the modelling report.

25 Assuming chlorophyll a changes are also consistent with total nitrogen changes, then it seems a higher maximum chlorophyll a increase, for example up to 6.5 per cent above the present day baseline, is a more realistic maximum level of change expected from the proposal. I make this distinction as this is the predicted level of change that the king shag population might experience."

30 So just to expand on that, I guess this comment is referring to a king shag that is currently swimming in the Sounds now would more likely, or a few years ago, would experience a baseline that didn't have as much feed going into it as was modelled in those baseline scenarios in the report. So, what I've done is worked out what those lower feed values would be and then using a relationship that was shown in that report sort of hindcast potentially what that other scenario would have looked like without actually having to rerun the model. Because that appeared to be quite a strong relationship, I think it's valid but, obviously, it isn't a proper rerun of the model so that's just to put some caveats around that.

5 "Provided any proposed feeding increases are introduced slowly, for example ten or more years until full production and comprehensive monitoring is introduced, large long-term changes in measures of phytoplankton abundance, for example a 6.5 per cent increase in chlorophyll, will be able to be detected and management restrictions introduced if required."

Point 3:

10 "In foraging depth calculations, Mr Schuckard appears to have used a higher value for the effect of chlorophyll a on light attenuation than that used by Dr Broekhuizen and myself. Mr Schuckard has provided the underlying information behind his calculation assumptions from his presentation. His calculations aim to show how critical 0.5 lux
15 illumination level for feeding shags from the paper of Wallace et al 1999 could be affected by changes in chlorophyll a. He has cited Tesla et al 1994 as the source of his attenuation data and has specified a surface illumination of 100 lux.

20 Based on Tesla et al 1994, a base of no chlorophyll attenuation of 0.06 per metre value is used. This base attenuation relates to clear Southern Ocean waters discussed in Tesla et al 1994 which were associated with a Secchi disk depth of about 24 m. Maximum out of Pelorus Sound Secchi disk depth are around 13 m (see figure 2 below).
25 This is an important consideration as differences in the base attenuation value used affects the influence of chlorophyll a on total light attenuation. As Mr Schuckard has assumed a lower attenuation/higher Secchi disk depth in his calculations, this has the effect of increasing the effect of phytoplankton and chlorophyll a on light attenuation in the
30 region.

35 An effect of chlorophyll a on the light attenuation of 0.042 per metre per/mg of chlorophyll per cubic metre is also applied in the calculations of Mr Schuckard. In previous calculations, for example my Board of Inquiry evidence from 2012, I have used a value of 0.02 rather than 0.042 based on a model parametrised value provided by Fasham et al 1990. This value is slightly lower than used by Dr Broekhuizen which was .025 which is based on Kirk 1983. Consequently, it appears the value used by Mr Schuckard is almost double the value we have used
40 in our analyses. This does not mean that the higher value of 0.042 is wrong but that is probably at the higher end of the range of parameter estimates. This has the effect of increasing the effect of phytoplankton and chlorophyll a on light attenuation in the region.

To illustrate these differences, I have reproduced Mr Schuckard's graph (paragraph 16 from his presentation) alongside prioritisations that use my own base attenuation values and Fasham et al and Kirk estimates of chlorophyll a dependent attenuation. I should note that my own base attenuation values are based on the measured Secchi disk depth of 13 m (that is shown in figure 2).

In order to use more realistic estimates of base attenuation, I have assumed a Secchi disk depth of 13 metres at a concentration of 1 mg per m³ of chloroform based on measures in the outer Pelorus monitoring site. This equates to a base attenuation Secchi disc depth of 16 metres per Fasham and 17 metres per Kirk respectively."

The reason why there is a slight difference there is -- what I've done is use the 13 metres and converted it, sort of take out the chlorophyll effect from that value and you can see it had a value of 1 mg per cubic metre. The fashion attenuation coefficient of effective chlorophyll is slightly smaller so it has less of an effect on the Secchi disk depth so it goes from 13 to 16 metres. Whereas because the Kirk value is slightly higher it suggests that the non-chlorophyll attenuation would be slightly deeper at 17 metres. That's the reason for those differences.

If you look at figure 3 you can see the difference of how that parameterisation affects the curves. So the dashed line, the Tesla line, shown on that graph is the same as shown by Mr Schuckard using the values he provided to me and just illustrates the differences, how differences in parameterisation can affect that curve after I've drawn the Fasham of Kirk line based on my own values and the values in those two papers.

Assuming a 6.5 per cent increase in chlorophyll a occurs from a value of 1 mg per cubic metre of chlorophyll, that would increase it to 1.065 mg per cubic metre of chlorophyll and this equates to a foraging depth decrease of, at most, 1.35 metres, or 2.6 per cent using Rob Schuckard's values to a minimum of 0.56 metres, using Fasham's value and I think Kirk's value is sort of inbetween those two.

It is difficult to envisage that these relatively small changes would have a large effect on king shag foraging area, particularly with Secchi disk depths at the outer most site, Pelorus 7. So PLS7 just refers to the Marlborough District Council monitoring site.

CHAIRPERSON: Yes, we saw those, they are on the plan that we got this morning.

MR KNIGHT: All right, thank you. So, yes, just to make the point really that values of up to 1.35 metres are going to be quite difficult to detect when you see quite large variation, looking at figure 2 in the Secchi disks depths out there already. Yes, obviously the Secchi disk depth change will be even smaller than that.

Point 4. The value of surface illumination, 100 lux used by Mr Schuckard is very low. A check of the surface illumination value used by Mr Schuckard is consistent with a very dark, overcast day, and I am quoting that from the Wikipedia table that I have put in the following section. Consequently this represents a very low surface like condition to consider the depth that 0.5 lux could be observed at. I've just sort of copied that table on page 7. By assuming surface like conditions are full daylight, for instance, 10,000 lux so 100 times higher, the depth at which 0.5 lux would be observed would be increased considerably. So I've just basically repeated figure 3 and figure 4 but just changing the lux value to 10,000 and you can see that suddenly the depths are increased as those curves are moved up. This implies the potential foraging area for king shags as potentially larger and less likely to be affected by changes in the light penetration suggested in the evidence of Mr Schuckard.

So in conclusion, point 5, there appears to be a low risk of substantial change to the light environment from the proposal. I base this on the conclusion of the model estimates of relatively small changes to the phytoplankton population, and that previous calculations presented by Mr Schuckard appear to be highly conservative.

[2.15 pm]

If the relocation proposal proceeds it will be very important that initial model predictions of phytoplankton are routinely updated and checked against in situ measurements. This will require slow incremental increases in production combined with carefully considered and thorough monitoring. In addition, appropriate consent conditions will also be required to ensure farm management and long term production targets can be reduced if required. I understand that the proposal is considering very thorough monitoring which could also include approved light monitoring. For most sites, increases in feed will occur in five stages at three year intervals and only if monitoring demonstrates the effects remain within set water quality limits. Consequently it seems that these considerations have been addressed in the proposal.

CHAIRPERSON: Thank you, Mr Knight. Dr -- I'm sorry, how do you pronounce your name? I must get it right?

DR BROEKHUIZEN: I pronounce it Broekhuizen.

CHAIRPERSON: Broekhuizen.

DR BROEKHUIZEN: I think a real Dutch person would pronounce it slightly differently, but unfortunately --

CHAIRPERSON: Well, you will settle for Broekhuizen will you?

DR BROEKHUIZEN: Yes, I will.

5 CHAIRPERSON: Thank you. Now, do you want to add to this?

DR BROEKHUIZEN: I propose to read the Executive Summary from the report I've submitted to MPI. I apologise, the report is still in draft, it needs two more signatures from reviewers before I am allowed to strip off the draft stamp. I do have copies here.

10 CHAIRPERSON: Is this a new one? We have seen a report by you.

DR BROEKHUIZEN: Well, I was involved in doing the biophysical modelling so, yes, you would have seen reports from me on that, a couple for Queen Charlotte and one for Pelorus, I believe.

CHAIRPERSON: Yes.

20 DR BROEKHUIZEN: In response to Mr Schuckard's evidence the Minister for Primary Industries asked me to review his evidence related to Queen Charlotte --

CHAIRPERSON: And this is what you are doing now?

25 DR BROEKHUIZEN: So this is what I am doing now.

CHAIRPERSON: Right, thank you.

30 DR BROEKHUIZEN: Do you have -- have you been presented --

CHAIRPERSON: No, we haven't got that.

DR BROEKHUIZEN: I have several copies here. So once this has gone through our internal review process the draft watermark and various other bits and bobs will change, but hopefully nothing material will change. I should note this is written on a standard NIWA template, which includes appendices or room for appendices. There are not appendices. There is a section called appendix A but there will be, in the final version, no appendix.

40

CHAIRPERSON: Can we --

DR BROEKHUIZEN: I propose to read just the Executive Summary but if you like I can also read the first two paragraphs of the main report which states my qualifications and the fact that I have read the practice note on expert witnesses, et cetera.

45

CHAIRPERSON: No, we will take that as read, thank you.

DR BROEKHUIZEN: In that case I will start at the beginning of the Executive Summary which is on page 5 and I will do my best to read verbatim.

CHAIRPERSON: Yes.

5

MR DORMER: That does help because if you start introducing new words we wonder whether you were sufficiently careful in your production of your written text.

10 DR BROEKHUIZEN: I understand that.

15 "During the ongoing hearings related to the Marlborough Salman Farm Relocation Proposal Mr Rob Schuckard present evidence in which he argued that the maximum depth to which king shag could successfully forage by vision falls from about 52 metres to about 27 metres as chlorophyll concentrations rise from 1 mg per cubic metre to 2 mg per cubic metre. He used those calculations together with results drawn from biophysical modelling that we have undertaken as part of the assessment of environment effects for the salmon farm relocation proposal to suggest that the foraging depths for king shag might become substantially reduced if the relocated farms were to be developed to the extent implied by some of the scenarios we examined.

20

25 The Ministry for Primary Industries asked us to review Mr Schuckard's evidence, focusing upon evaluating the validity of his assumptions regarding the influence that chlorophyll has upon light attenuation within Pelorus Sound. As part of the review I have given consideration to the coefficients adopted by Mr Schuckard. As a part of that I have examined the relationship between light attenuation inferred from measurements of depth specific photosynthetically active radiation, that is PAR, at seven stations within Pelorus Sound. I have also examined the relationship between light attenuation inferred from measurements of Secchi depth at the same seven stations within Pelorus Sound. I have also given consideration to the manner in which Mr Schuckard has interpreted the results of the biophysical modelling that we undertook for the salmon farm relocation, AEE.

30

35

My conclusions are as follows."

40

For those who can't see this, it's actually in bullets but I am going to number them.

45

"(1) Mr Schuckard assumed that the light intensity immediately below the sea surface is 100 lux. That is information provided by Mr Schuckard by email to Mr Ben Knight. Unless king shag preferentially feed around dawn or dusk, this figure seems very low. The light intensity under a summer overcast sky is around 1,000 lux, under a clear sky it can exceed 30,000 lux. Wikipedia suggests that 100 lux would be associated with a very dark overcast dark.

(2) The estimates of light attenuation derived from direct measurements of depth specific light intensities in Pelorus Sound and light attenuation derived from Secchi depth in Pelorus sound corroborate one and other.

5 (3) Both indicate that light attenuation does increase as chlorophyll concentrates rise, however (a) within Pelorus Sound the slope of this relationship is much shallower, half or less than Mr Schuckard assumed. (b) the chlorophyll independent component of light attenuation within Pelorus Sound is around two and a half times larger than Mr Schuckard assumed. (3) chlorophyll is not the dominant driver of spatial and temporal variability of the light attenuation within Pelorus Sound. I speculate that fluctuating concentrations of suspended sediment are.

10 (4) In consequence, I believe that it is likely that Mr Schuckard has overestimated the putative light limited at 100 lux foraging depths of king shag when chlorophyll concentrations are low and overestimated the rate at which this foraging depth declines as chlorophyll concentrations rise.

15 (5) Whilst our modelling does indicate that time average chlorophyll concentrations will rise during the mid-spring to mid-summer period, even the largest rise, less than 0.1 mg chlorophyll per cubic metre is small relative to the Sounds wide medium chlorophyll which is approximately 1 mg per cubic metre."

20 I'm sorry, I've lost count. I think this is bullet 6.

25 "More importantly, it is also small relative to the range of chlorophyll concentrations that are being measured within the Marlborough District Council data, that is .18 to just over 5 mg per cubic metre in the data. The highest chlorophyll concentrations that I'm aware of from Pelorus Sound region is around about 25 mg per cubic metre in Kenepuru Sound."

30 I'm sorry, I won't add any more information, it's in the report.

35 "Whilst Mr Schuckard is right that farm feed induced chlorophyll in chlorophyll concentrations would result in increased attenuation and decreased putative maximum foraging depths if they were to occur in the regions where the shag foraging [this is probably 8(a) now] calculations based upon the Pelorus Sound PAR and Secchi data suggest that the foraging depth loss will be much smaller in an absolute sense than Mr Schuckard calculates, but larger in a relative sense if his sea surface lux value is adopted. (b) the areas where the birds do forage are not the areas where the biggest chlorophyll increases are observed in our AEE biophysical modelling."

40 Excuse me a moment.

5 "Our biophysical modelling indicates that time average spring/summer chlorophylls will rise a little if fish feed input rise. Scenario 13, which modelled the discharge of 57,726 tonnes of feed over an 18-month period induced a summer time average chlorophyll increase of less than 5 per cent, in fact around 2 per cent relative to the base line of 24,080 tonnes. In absolute concentrate terms this chlorophyll increase amounts to less than .1 mg chlorophyll per cubic metre.

10 Our modelling suggests that the chlorophyll increments will be much smaller. A time average increment of less than .04 mg per cubic metre in those parts of Pelorus where the shags are commonly seen. There have been suggestions that a reduced baseline ought to have been used. Had we done so, and rounding upwards, the resulting figure I believe is approximately .105 mg per chlorophyll per cubic metre increment
15 over that reduced baseline. In my opinion that is not meaningfully larger than .1 mg per cubic metre given the uncertainties in the modelling biophysical and shag foraging and the large fluctuations evident in the field measurements of chlorophyll.

20 Our biophysically modelling indicates that time average spring/summer chlorophylls will rise a little if the fish feed inputs rise. Like the data from the field, the modelling also indicates that chlorophyll concentrations can vary by a factor of two or more across
25 space and time. The additional fish farm inputs change the nature of the spatial variation a little by inducing greater chlorophyll increases in the inner sound than elsewhere. On the other hand, the increased farm inputs do not material change the frequency, duration or amplitude [I'm sorry there is a misspelling there] of seasonal scale or weather scale temporal chlorophyll oscillations. Even in the main channels and
30 central parts of the larger bays within Pelorus Sound chlorophyll concentrations have briefly climbed to 3.5 and even 5 mg chlorophyll in the past and they are likely to do so again in the future. Our modelling to date indicates that the salmon farms are unlikely to be the primary drivers of such events."

35 CHAIRPERSON: Thank you, and that's a summary of what follows in the pages?

DR BROEKHUIZEN: Yes, that's right.

40 CHAIRPERSON: Now, what -- this is labelled a draft so what rate do we give to it?

5 DR BROEKHUIZEN: It goes through three review or three people to review. One reviews the basic science, and it does have that signature on it; the second one gets reviewed by one of our chief scientists and again it's a review of the science and is it meeting NIWA's sort of high standards, is there anything in there that is going to disgrace NIWA in terms of presentation or anything like that; and then the final one actually focuses just on the presentation rather than the content. So it has had the key science review and I'm not -- there are a couple of typos I have just spotted in the Executive Summary that hopefully I will remember them and fix them before it's finalised. I'm not anticipating any material changes to the content of this report.

10
15 I'm sorry, like us all, I'm juggling a lot of balls and doing this review was unexpected.

15 CHAIRPERSON: I understand that, I just want to be sure that this really is your evidence, isn't it?

20 DR BROEKHUIZEN: Yes.

20 MR DORMER: At the bottom of page 6, do we have another typo?

DR BROEKHUIZEN: Sorry, I stupidly haven't brought a pen in but ...

25 MR DORMER: "Even the main channels, central parts of larger bays within Pelorus Sound, chlorophyll concentrations had briefly climbed about 2."

[2:30 pm]

30 DR BROEKHUIZEN: So that should be "above", to above 3.5.

MR DORMER: Climbed above 3.5?

35 DR BROEKHUIZEN: Yes, and even 5 mg, yes.

MR DORMER: Okay, thank you.

(off mic conversation)

40 CHAIRPERSON: Ron?

45 MR CROSBY: Dr Broekhuizen, have you had a chance of seeing the actual monitoring reports that have been lodged with Marlborough District Council by Cawthron recently?

5 DR BROEKHUIZEN: No, I haven't seen the recent ones. I was -- before the new farms were allowed to go into the water, New Zealand King Salmon had to undertake a year of monitoring. I was involved in writing some of those -- the final reports relating to that baseline monitoring but I haven't seen the reports that have just come out on the first year of operation.

10 MR CROSBY: All right, thank you for that, in that case I'll direct the question solely to you, Mr Knight, if I can.

MR KNIGHT: Yes, no worries. I am actually an author of one of those reports.

15 MR CROSBY: Yes, we noticed that and I just wanted to clarify whether or not Dr Broekhuizen has seen them as well, but he hasn't. So the questions are directed only to yourself. As we read your peer review of Dr Broekhuizen's modelling work it raised, as you've said here, a number of issues of concern or caution really but came to the conclusion that there was nonetheless a plausible, I think, was your word, outcome that could be confidently relied in the modelling. And that is the picture you give again today. Was there anything in those reports which we are still wading through in terms of actual sampling and analysis that you have now conducted that makes you form any different view on the reliability of the modelling that was carried out?

25 MR KNIGHT: Not to my knowledge, no. I guess the important thing to take into consideration with those modelling reports, or at least the annual monitoring reports, they are typically focused around the farm so they are quite a sort of fine or medium analyses of the effects, and I notice that Neil's model, he tends to predict effects which are quite a long way from the farm, so up in Kenepuru Sound. Some of the largest changes are potentially up into some of the inlets. I don't envisage these annual monitoring reports are really going to get at those sorts of changes. So the way the consent is constructed it is envisaged that a major review will be done every three years and I think that is where you'll start to see if those sorts of effects are showing up that are consistent with the modelling.

40 But, I guess, in terms of the fine scale effects, yes, everything that I've seen is consistent that there is a pretty rapid drop off in detection of effects. It's pretty difficult to detect sort of greater than 500 metres from the farm. So we have one site that's at 500 metres and it's very often very close to the control sites we have around those farms.

45 MR CROSBY: I haven't read the full body of your reports yet, I haven't had time, but in terms of the Executive Summary, there was a reference to chlorophyll a and it appeared to us a recommendation that there was no longer a need possibly to measure those differences. Have we read that correctly or not?

MR KNIGHT: I think that might be to do with the fine scale chlorophyll a. So I guess the problem with the phytoplankton effects is that there is a process. So if you're a phytoplankton cell and you're exposed to nutrients or nitrogen in particular that is coming out of the salmon farm, it is going to take you a while as a cell to assimilate that and then you use light to grow. So we typically talk about doubling times of a couple of days for phytoplankton populations. So to sort of measure in effect 100 metres downstream from the farms seems a bit crazy and we have a fine scale monitoring regime that looks at chlorophyll levels right beside the farm, 100 metres away from the farm, 250 metres away from the farm, 500 metres away from the farm, so you can see that all these sites are very close together and you're looking for a parameter that you don't really expect to change very much over those link scales. So it does seem to me a bit redundant and I guess that's what our comments were focused on. It wasn't getting rid of chlorophyll monitoring per se just very fine scale monitoring like that.

CHAIRPERSON: Mr Knight, on page 6, the passage that you have read in the Executive Summary, there is a reference in the second to last paragraph, about the middle, that says:

"There have been suggestions that a reduced baseline ought to have been used."

I'm not sure quite what you are referring to there.

DR BROEKHUIZEN: I'm referring there primarily --

CHAIRPERSON: I'm sorry, am I asking --

DR BROEKHUIZEN: Yes, I'm sorry, I think you're referring to my document.

CHAIRPERSON: So I am.

DR BROEKHUIZEN: I was referring to the suggestion in Mr Schuckard's presentation that it was inappropriate to -- that the baseline that we had used which included Crail Bay farms was an inappropriate baseline.

CHAIRPERSON: Oh, that is the reference, is it?

DR BROEKHUIZEN: That is what I was referring to, yes.

CHAIRPERSON: Yes, that's the point that we've already canvassed with other people today.

DR BROEKHUIZEN: Yes.

CHAIRPERSON: Now, you are both scientists and you have referred to some material from Wikipedia. Is that a scientific publication?

5 DR BROEKHUIZEN: No, it's a readily accessible resource that people can easily look up, however in the detail of my report I point you to actually another webpage which presents a similar table, very similar numbers, from an instrument manufacturer actually. No doubt with a bit of effort I could go into some table of numbers in a standard physics textbook or something like that. Lux is a slightly unusual measure of light intensity in the context of phytoplankton. We usually measure light intensity as the number of moles, the number of photons arriving on a metre square per second, so that's if you like an absolute measure of light intensity. 10 Lux is, as I understand it it's a measure of light intensity as perceived by the human eye. And the human eye is more sensitive to some wavelengths of visible light than to other. So 100 lux of red light, as I understand it, would not look as bright as a 100 lux of yellow light.

15 MR DORMER: What's heavier, a tonne of bricks or a tonne of feathers?

20 DR BROEKHUIZEN: Well, in terms of number of photons they are the same but in terms of lux apparently they would feel different, but I am now straying out of my area of expertise.

CHAIRPERSON: So where in your detailed report do you refer to this table? Here we go. You are looking at page 11 is the value for ...

25 DR BROEKHUIZEN: Yes, the last paragraph on page 11 will point you to the alternative link I give you as skyinstruments.com, wp contents uploads, light guidance notes. In the Wainless paper that Mr Schuckard cites for his blue shag, Wainless and Co were studying blue shag, they show light measured in lux on diving shag and at the sea surface the lighting sensors recorded were in excess of 1,000 lux. So there are graphs of lux versus time, 30 and it is high when they are at the surface and drops, stays low, climbs back up and when they are at sea surface it's about 1,000.

35 CHAIRPERSON: That's part of Mr Schuckard's evidence, isn't it?

DR BROEKHUIZEN: He cites that paper, I don't recall whether he presents any figures from it, any pictures from it.

40 CHAIRPERSON: He cites it, yes. Finally, at the top of page 6 - again, I am referring to your Executive Summary - you say:

"Chlorophyll is not the dominated driver of spatial and temporal variability over the light attenuation in Pelorus Sounds."

45 Then you speculate. Do scientists speculate this?

DR BROEKHUIZEN: Well, at some point I think we all speculate. What I'm trying to convey there is -- so if you look to, for example, figure 3.4.

CHAIRPERSON: Which is the main body?

5 DR BROEKHUIZEN: Which is in the main document, so figure 3.4 on page 18. I show scatter plots, this is Marlborough District Council data, these are scatter plots of Secchi depth measured against turbidity, which is a measure of the clarity of the water, how regularly it scatters light. So it's really a measure of suspended solids. Another one of Secchi depth plotted against the concentration of total suspended solids, Secchi depth against the concentration of volatile suspended solids. So that's a measure of total organic matter. And Secchi depth against chlorophyll. The correlation between Secchi depth and total suspended solids is much closer than the correlation is with chlorophyll. It is much less scattered really.

15 CHAIRPERSON: So why do you say, "I speculate"?

DR BROEKHUIZEN: Because I haven't formally done detailed regressions. I've eyeballed that plot but that's all I've done, I haven't done anything more formal than that.

20 MR DORMER: So it's an education speculation?

DR BROEKHUIZEN: I would like to think so, yes.

25 MR CROSBY: Were either of you gentlemen involved in the production of the 5 mg level for chlorophyll level in the Board of Inquiry report down to 3.5 in the actual conditions of consent?

30 DR BROEKHUIZEN: I was involved in developing -- turning the Board of Inquiry consent conditions into something that could be used as a practical monitoring trigger point scheme, yes.

MR CROSBY: That seems more conservative, why was it selected?

35 DR BROEKHUIZEN: My recollection is that the 3.5 was -- I think it might have been the 95th percentile of the historical data or a rounded representation of the 95th percentile of the historical data. But I am not absolutely certain on that. I do recall calculating 95th percentiles at some point.

40 MR CROSBY: I haven't picked it up in the Board of Inquiry report necessarily but why did they select 5 in that case?

45 DR BROEKHUIZEN: I'm not entirely sure. The NZKS proposal included some consent condition numbers that I was not involved in developing those. The 5 mg was part of that and there is -- 5 mg is, in a variety of literature from overseas is sometimes nominated as a threshold for the switch from mesotrophy to eutrophy. So from a mediumly enriched environment to a highly-enriched environment.

[2:45 pm]

MR CROSBY: Thank you.

5 CHAIRPERSON: Yes, thank you both very much. Thank you for coming.

DR BROEKHUIZEN: Thank you.

10 CHAIRPERSON: That completes the matters you want to put before us, Mr Davies?
(off mic conversation)

15 CHAIRPERSON: Yes, thank you. Right, MPI. Who else is presenting for MPI? Yes, the two of you can come forward, thank you.

MR LEES: Although Richard is here with me he was employed to provide independent advice.

20 CHAIRPERSON: Absolutely right.

MR LEES: You might like to hear from him first because --

25 CHAIRPERSON: I am going to hear from him -- well, we are going to hear from him first. Yes. We accept that he is not part of your reply.

MR FOWLER: I feel I am being distanced.

MR DORMER: But made more valuable, nevertheless.

30 CHAIRPERSON: So we have recently had your -- benefit of your memorandum to us.

MR FOWLER: Yes.

35 CHAIRPERSON: I think it would be helpful, because we haven't really had a chance to study it all, because of other things, if you'd be good enough to take us through it.

40 MR FOWLER: Yes, very happy to do that, sir. I'll just do it in a helicopter fashion over the top. I'll talk to it rather than read it out. What I do is start with some preliminary observations, which are -- it's shameful in a way that I mention them at all, because they're the sorts of things that people describe things like geography as: that is the study of what's perfectly obvious. That is that section 630B(2) contains some must do factors and 360B(3) some -- a mandatory process. That's the starting point in terms of any questions that you've got to address regarding process
45 issues that have been put before you by submitters.

5 Nowhere in the legislation is there any reference to such an animal as
an advisory panel. But what I say in terms of this preliminary piece is
that what has been set up in the terms of reference meets and exceeds
the minimum requirements of the legislation. That's in 360A or B,
meets and exceeds. Why do I say exceeds? This actually isn't in the
written advice. Well, you're having a hearing, you've got things like
your experts conferencing and so on, that are then dated by the terms
of reference. Those are things that actually exceed the statutory
10 minima. So that whilst what we've got in terms of a process here is
something of a hybrid, there's nothing wrong in that, nothing to be
criticised in that. It's actually an excess of the RMA philosophy of
participation or the principle of participation.

15 CHAIRPERSON: That's in the context of that part of section 360B that refers to public -
- to consultation.

MR FOWLER: Yes. Yes, there's reference to public -- to consultation, but what I'm
20 saying is that what you've got in your TOR, your terms of reference,
goes even further than those statutory minimum. The very fact that
we're sitting here, you wouldn't necessarily even have to have a public
hearing if you were just going to stick with the statutory minima.

CHAIRPERSON: The statutory minimum in the context of consultation.

25 MR FOWLER: Yes.

CHAIRPERSON: All right.

30 MR FOWLER: Yes, in the context of consultation. The last preliminary point that I
make before moving to the questions that you asked me to address was
this, that is that there's nothing within 360B that fixes a sequence,
because a number of the questions that you've been asked or that you've
posed relate to points that have been raised by submitters about
sequence. What I'm pointing out in that preliminary part there is
35 nothing in 360B fixes a sequence, save for the obvious point that your
report would come at the end of the process before the minister makes
recommendation.

40 MR DORMER: Does it come at the end of the process?

MR FOWLER: Yes, at the end of the process.

MR DORMER: Doesn't our report therefore come after the section 32 analysis?

45 MR FOWLER: Yes. Yes, it does. Yes. I'm sorry, did you say section 32?

MR DORMER: Yes.

MR FOWLER: No. No, it does not.

- MR DORMER: No. So therefore our report doesn't come at the end of the process.
- 5 MR FOWLER: No. I meant the report has to come before the recommendation, because that's otherwise --
- MR DORMER: Of course.
- 10 MR FOWLER: That's obviously logical. It couldn't be any other way.
- MR DORMER: I'd understood that --
- MR FOWLER: Yes. Section 32, I'll come to that.
- 15 CHAIRPERSON: Yes, you will.
- MR FOWLER: Yes. So I'll go straight to the first question. That was in three limbs. I will read that out:
- 20 "Is the proposed use of sections 360A and 360B, to relocate salmon farms in the Marlborough Sounds an improper or unlawful use of section 360A, because [and the first limb is] it is a concurrent plan or coastal permit application dressed up as a plan-making exercise? [Second limb] It is not appropriate for the Ministry for Primary Industries to undertake the role and cost of a private plan change or consent process. [Third Limb] It is inefficient for the Ministry for Primary Industries to amend a plan mid review, as it undermines the strategic and integrated approach to aquaculture management."
- 25
- 30 So taking each of those three limbs --
- CHAIRPERSON: Just before you go on, your reference there, I think, is to the formal comment or submission or EDS.
- 35 MR FOWLER: Yes.
- CHAIRPERSON: Have you seen Mr Enwright's legal submissions that he presented to us on the 5 May?
- 40 MR FOWLER: I haven't seen the written submissions, sir, but I did read the transcript. I went back and I read the transcript where he presented them. But if there was a written submission, no, I haven't seen that. But I saw the exchange that you had with him.
- 45 CHAIRPERSON: All right. Thank you.

MR FOWLER:

5 So, taking the first limb. That is this question of whether it's a wolf in sheep's clothing, this dressed up piece. That point has to be predicated on -- that you can't produce regulations that are site specific. To my mind the answer to that is pretty crisp. Section 68(5)(d): "A rule can be specific or general." That, I think, spells the end of that as any possible criticism.

10 Now, I've got to say with regard to the second limb about the involvement of the Ministry for Primary Industries, I just don't understand the point even after reading the transcript. I don't actually understand the criticism or how there could be a criticism. I don't see anything in the legislation that would prevent the Ministry for Primary Industries taking the role that it has taken, both in terms of a secretariat or in terms of assisting this process. Unless there's something that the panel can recall or bring to my attention I don't intend to address that further.

20 The third limb is an interesting little one because it actually initially could get a little bit of traction, because interestingly the wording of section 360A(2)(a) does refer to operative plan. It uses the word "operative". So you might initially hang something on that. But my advice would be the -- although the override relates to an operative plan, the ability to review remains unaffected. So really the point goes nowhere, because the regulation effectively changes what the operative planning provisions are. That's the end of the matter. Beyond that any issues of inappropriateness or efficiency are self-evidently not legal issues. Those are issues of judgement and assessment for you.

30 That is that first question. I'll move to the second one. This is the section 32 point:

"Is the non-provision of a section 32 report at this stage of the process unlawful?"

35 What EDS appears to have been basing that on is the wording of section 32(5)(b), which does place the timing of a section 32 report into a particular sequence. That's if you're running your ordinary plan change or plan creation process, because the wording of 32(5)(b) is: "At the same time as the proposal is publicly notified." But what that overlooks is that there are two limbs to that sub-section. And (a), which is the one that is referable to regulation making, says as follows:

45 "As soon as practicable after the proposal is made (in the case of a standard or a regulation)."

5 So that's our one, if you like to put it bluntly. In respect of that particular avenue, it's after the proposal is made. We have a proposal that will go forward at a particular point in time and section 32 report can follow that. As I said before, before I misunderstood your question, Mr Dormer, the wording of 360A and 360B does not impose a particular sequence, does not fix those -- that's a sequence in stone.

The next question that I was asked is:

10 "Is the use of section 360A to provide for salmon farms in currently prohibited locations beyond the power of the provision?"

15 My answer is relatively short in respect of that. There's nothing I can see in section 360A that restricts that at all. There's no restriction there that would have any bearing that would compel any unlawful -- or suggest any unlawfulness answer to that question.

The next question:

20 "Is the use of section 360A to provide for salmon farms in currently prohibited locations beyond the power of the provision?"

This was a Royal Forest and Bird submission, I think.

25 CHAIRPERSON: Yes.

MR FOWLER: Yes, it was.

30 CHAIRPERSON: Again, have you seen Mr Ironside's ...?

MR FOWLER: Yes. Now, on that one I did get to see it. I have read it, yes.

CHAIRPERSON: Yes.

[3.00 pm]

35 MR FOWLER: The point here seems to be that 360 is directed to management only and not occupation. It is a submission that tends to suggest that those two dimensions, if you like, are separated. My answer to that goes like this, section 360A uses the expression aquaculture activities. That is defined in section 2 of the Act with reference to section 12. It is all of section 12. It is not with reference to one particular part of section 12. It's referable to section 12 full-stop. If you then go to section 12 of the Act, that clearly contemplates both dimensions. That's both activities and occupation. So, to my mind the answer there is reasonably easily
40
45 obtained.

5 Mr Black, I was asked to look at Mr Black's submissions. He did have a sub-set, if you like, to that. He developed it a little bit further. He referred to section 360A(2)(b) in this question of consistency or inconsistency. The problem with that was that he was focussing on an inconsistency in terms of treatment of the CMZ1 zone within the regional coastal plan. But what 360A(2)(b) addresses is inconsistency within the RMA. So the very fact that you might spot an inconsistency with the zoning provisions or classification in the plan doesn't raise a legal issue. It might raise an assessment issue for you in terms of your assessment of how this all fits together, but it does not raise a legal issue, if that is what he was submitting to you.

10 CHAIRPERSON: That was in the context, was it, of the provisions for allocating aquaculture space?

15 MR FOWLER: Yes.

CHAIRPERSON: In the RMA itself?

20 MR FOWLER: Yes.

CHAIRPERSON: I must say, I wasn't quite clear what he was driving at there.

25 MR FOWLER: No. Well, if it's a legal issue, I'm saying that I don't -- I certainly don't agree with him. I can't see it.

CHAIRPERSON: Well, I suppose it must follow, if you're making a change to the plan.

30 MR FOWLER: Yes. Well, if you're making a change that is what you're doing.

CHAIRPERSON: Yes.

35 MR FOWLER: That is exactly what you are here for. So it's a matter of -- just takes you back to the same point. It's a matter of assessment for you.

CHAIRPERSON: Yes.

40 MR FOWLER: The second sub-set to that broader question that Mr Black raised was that this question of the old sites, the relinquished sites, call them the donor sites, becoming prohibited, falling into the classification of prohibited areas -- prohibited activities, I should say. His point was, as I understood it, that that's not part of the -- that's not -- there's a vires problem there. I don't agree and I don't follow that, because I would have thought that prohibition is part of management. If you are managing an activity would that not also involve determining places where it is not to be permitted or there are not even to be applications for aquaculture activities within a particular area? So, I don't agree that there's a legal issue there.

45

That disposes of the section 32 question -- I'm sorry, the 360A question, in terms of the vires issue. The next one was, again, a Forest and Bird one: "Section 360A(1) allows regulations --" no, I think I've dealt with that, sorry. Yes, I had dealt with 360A. It's 360B. This was a Friends of Nelson Haven and Tasman Bay submission:

5

"Section 360B(2)(c) sets out various requirements that the Minister must be satisfied of before he or she recommends to the Governor General the making of regulations. Is the fact that he has not yet done so wrong in law?"

10

Well, in my view, this just takes you straight back to the sequence point and I give you the same answer, in terms of advice, that I gave you before on sequencing. Which then moves to the last question, which is:

15

"Is the regulation making power in section 360A narrowed or circumscribed by reason of the fact that the values likely to be affected are predominantly those within the shared responsibility of the Council and the Minister of Conservation or by reason of the requirement to continue to give effect to the New Zealand Coastal Policy Statement and in particular policy 8?"

20

That was also a Friends of Nelson Haven submission. Now, what I say to that is that section 360A is permissive. There is no particular restraint within 360A or B that is relevant to that issue, that's that question of values. But it is correct that the advisory panel would need to be satisfied that the New Zealand Coastal Policy Statement can continue to be given effect. So, to that extent I do walk with Friends of Nelson Haven and Tasman Bay as a matter of law. To that extent that is so. But that is all, because again it comes back to being an assessment for the advisory panel, not -- it's not a -- the issue of law can only be stated as blandly as that. The question of whether it is or not is again, as I said before, a matter of assessment.

25

30

35

Now, unless there's anything else that I've overlooked in terms of what I was supposed to be answering those are my answers. I'm very happy to discuss any of those points any further or any others.

40 CHAIRPERSON:

Thank you very much, Mr Fowler. The only concern I've got in terms of following the arguments that you've advanced to us is in relation to section 32(5). It's just to pose a question to you, I suppose, which was really probably raised by the person presenting it to us, that is: what is the purpose of public notification, if we were to accept your argument? What purpose does public notification of the section 32 report achieve, if it comes at that late stage?

45

MR FOWLER: Well, it's still achievable. Sorry, I just need to make sure I'm understanding the question first. Are you talking about a section 32 report --

5 MR CROSBY: Well, I'll put it to you this way, as I understood the comments that were being made to us, and it was that the -- in essence, as I understood the comments, was: the purpose of public notification was to involve the public and give them an opportunity for participation and response. So, the challenge, I suppose, that that throws up is: what other purpose
10 might be achieved by public notification or do you argue that it's just simply an information process of what the ministers took into account before making the recommendation?

MR FOWLER: Well, you don't -- the two steps aren't necessarily linked. You don't
15 have to have a section 32 report for public notification to nonetheless draw to the attention of the public the fact that this process is happening, the fact that there are regulations on the table, or whatever. If I can be so insulant, you and I are old enough to remember a time when there weren't section 32 reports, but there still was public
20 notification under a previous statutory regime.

MR CROSBY: I suppose the only real conclusion one could reach following the approach that MPI have taken here of having section 32 at the end of the consultation period, as we understand the argument, is that the
25 requirement for public notification is to ensure that whatever the minister took into account is out there in the public arena. It's not necessarily something that -- there's no opportunity for participation by the public subsequent to that.

30 MR FOWLER: Yes, I agree with that.

CHAIRPERSON: As there would be in a normal first schedule process, where submitters would have the opportunity to challenge the section 32 by way of
35 submission.

MR FOWLER: Yes.

CHAIRPERSON: That doesn't seem to be the case here.

40 MR FOWLER: No.

CHAIRPERSON: I think that's part of what EDS was complaining about. They use words -- I've just had a look at the submission again of Mr Enwright. To us, he talked about breaches of natural justice, because the minister will have access to an analysis not seen or reviewed by submitters. That's the sort of flavour of what they were on about. That's what alerted us to this, particularly having regard to the words in the section 32(5) that talked about: "As soon as practicable after the proposal is made." Whatever that means. That's something that we're sort of wrestling with.

MR FOWLER: I think where we're getting to is the hybrid nature of this process. If this were a standard plan change, what you'd have is your 32 report, which is about Genesis: where does this plan change come from? Before it's even -- pen is put to paper in terms of the actual plan change itself. Then you're getting your -- you'd have your plan change provisions, your public notification where of course the section 32 report can be seen and so on, and then you have submissions on that and then you would have reports written on those submissions. So, by the time you get to a hearing, as a matter of natural justice, what submitters and so on are looking at is probably -- what is going to be most relevant will be what the officer's reports are saying, that they're 42A type analysis. On a full plan change, you've got quite a different looking process that's gone through some degree of evolution.

What we've got here is an abbreviated process. I still say that the -- I'll start the sentence again. Your section 32 report, you might well say here, takes a different function. It's more akin to what you would expect to see perhaps in an officer's report if you were having a normal plan change as opposed to this sort of hybrid that we've got here.

CHAIRPERSON: Except that one of the important things about a section 32 assessment, and it would apply here too, is that there's a cost benefit analysis done. And that's been a criticism of this process, that while there have been economic assessments, there's been no cost benefit analysis done of the proposed plan change provisions. Of course, we won't have that and the public who have participated won't have that, even though the Minister, the Act tells us, is required to have particular regard to that assessment before he recommends the regulation.

MR FOWLER: Yes. That's a fair point. I think that's a fair point. But the fact of the matter is we have an abbreviated process that on your terms of reference has been expanded beyond the statutory minimum, as I said. The fact that perhaps some detail that might have been like your cost benefit analysis might not have been before submitters when they came to give submissions, I would still say is not fatal. It is something that if you wanted to make an observation about in the course of your assessment, you could. You could draw that to the Minister's attention if it even recommends that there be further consultation on that. But that would be a matter for you. I don't see it as a legal tripwire.

CHAIRPERSON: All right, okay, thank you.

5 MR CROSBY: In essence you are really saying you've got to regard this as, to use your term, an abbreviated process. This section 32 and the lack of a cost benefit analysis prior to the comment process, you say is just one of the costs of an abbreviated process in the same way that you don't have right to appeal and don't have a full hearing.

10 MR FOWLER: Yes, it is. You could comment on it if you wished.

MR CROSBY: But it's not a legal --

15 MR FOWLER: But it's not a legal issue, no.

MR CROSBY: All right, thank you.

20 CHAIRPERSON: Could I then just finally ... go back to the preliminary observations and just try to clear my own mind and my colleagues as well, because we are in this strange sort of hybrid situation where we have had, amongst other things, some quite serious challenges to the legality of this process.

25 What do you see as being our function in reporting and recommending to the Minister, which is our terms of reference so we are to do? What is our function, do you see, with regard to those challenges?

[3.15 pm]

30 MR FOWLER: It's interesting, isn't it, because ordinarily it would be answerable with judicial review. You could say that these are points that are not within the terms of reference. They are for matters for whoever wishes to challenge because there's been some sort of process fault to challenge accordingly. You could -- that position is open to you.

35 But I would have thought that would be a particularly narrow and restricted response, and I would have thought that the Minister or, for that matter, the public would expect that if these matters had been raised before you, you could demonstrate that you have at least considered them because one possibility might have been to have simply downed tools and gone back to the Minister and said, "Well, we think there's a fundamental problem here". You clearly haven't done that, or you've done the responsible thing by at least continuing and hearing the balance of the submissions.

45

5 I think it would be perfectly appropriate to record that the challenge was raised, that may be necessary to record that anyway if they are going to take further steps, and to record the fact that you took advice and that you either followed that advice or did not follow that advice depending on your view of what we've canvassed in this session.

10 But probably that would be it. It's really for -- because they are in the nature of judicial review challenges. They're not really matters that would fall squarely within reference for something that needed to be addressed at great length.

CHAIRPERSON: That's because we are not exercising a statutory power of decision.

15 MR FOWLER: No. Well, that's an interesting point.

CHAIRPERSON: Or are we?

20 MR FOWLER: They would probably say there's a legitimate expectation issue and they'd probably say there's a failure in process. So, one way or another, it would -- I would suspect that they would be justiciable issues if they were correct so I don't know that one would say it's something that you could just sidestep by saying there's no power of decision being exercised.

25 CHAIRPERSON: I don't want to sidestep it. I don't think that's an appropriate way to fulfil our terms of reference.

MR FOWLER: No.

30 CHAIRPERSON: That's why I'm asking you.

35 MR FOWLER: I think you're absolutely right to face it. Face it, record the fact that it's been raised, perhaps record briefly the advice and whether or not you've accepted that. That, I would have thought, would be all that you could reasonably be expected to do by any authority.

CHAIRPERSON: Thank you. Mr Fowler, we're indebted to you. Thank you very much for coming.

40 MR FOWLER: Thank you very much.

CHAIRPERSON: You can leave. I only got you here to be efficient in time.

45 MR FOWLER: Thank you very much.

CHAIRPERSON: Finally we come back to you, Mr Lee.

MR LEES: Hello.

CHAIRPERSON: What is it? Five weeks later or something?

MR LEES: April the 10th, wasn't it?

5 CHAIRPERSON: Yes.

MR LEES: Quite a while. I think first of all I'd like to thank you for having us
back at the end to reply. I'd also like to thank you very much for the
10 diligence you've put into this process. I think whatever the outcome is,
it's been great to see the level of community input and the quality of
input both in support and against this proposal.

15 Today I will reiterate some of the key points of the proposal, you've
seen some of this before, and clarify some of the matters that have been
raised through the comments of the public and iwi authorities. I also
have Frances Lojkine with me and she's our expert from Montgomery
Watson.

20 CHAIRPERSON: Yes, hello.

MR LEES: She's available to answer any questions that you might have in respect
of the regulations and their operation.

25 You saw this at the beginning but I think it's important to reiterate that
primary industries are essential to New Zealand's future social, cultural
and economic growth. I'm in the economic development team and
we're looking right around the country at regional development
opportunities. It's really interesting. We go in and we hope there will
30 be a silicon chip factory or something like that, or a tech hub, but what
you find in many of the regions of New Zealand is that the primary
industries are probably the most important industries currently and into
the future. Tourism probably is in there as well. I guess all I'm saying
is that for New Zealand, primary industries are important for the future.

35 To grow sustainably, industries need to adapt to changing
environmental standards. The salmon farmers that we've been talking
about, they went into the water a long time ago. Most of them haven't
got modern consent conditions. There is a need for those farms to
40 adapt. Relocating salmon farms to higher flow sites could improve the
economic environmental and community outcomes and that's what
we're hoping for.

5 Recent reports show that some of our regions like Marlborough will struggle to grow into the future, and this increases the importance of these types of initiatives. We need vibrant regional economies and we need diverse economies. We see, for example, in Marlborough that the wine harvest has been affected by rain events. These types of things happen all the time and it's important to have diversity to order to maintain their wellbeing.

10 We need to diversify our regional economies and make use of their inherent assets to make them more resilient to future international shocks. Salmon farming has the potential to contribute significantly to this region's socioeconomic development and it is one of the most efficient ways of actually creating animal protein.

15 You saw this before. I won't go through it in detail. It just sets out the essence that potentially relocating six salmon farms could have some advantages. It's also noting that there's a lot of new information available that wasn't necessarily there at the time of the EPA, and in particular the new hydrodynamic water quality models that have been developed by NIWA and reviewed by Cawthron. Obviously, warming sea temperatures, although the last year has been okay, there have been extended periods of warming and that has been related to some of the concerns about the existing salmon farm sites. But what we want to see is consistent consent conditions. We want to see consistent monitoring and we want to see consistent management of the salmon farms in the Marlborough Sounds.

20
25
30 The next one is just more of a vision. What we're saying is that our industry is a continual adaption. So, we have seven farms or six farms that went into the water in the 1980s and they're in lower flow sites not ideal for modern salmon farm practices. They're also close to residences and they're in shallow bays. The second adaption in 2017/18 is the potential relocation. We're hoping for a better environment and benefits but we still recognise we are close to people, and you can see that from the submissions people have concerns about where salmon farms are located in Marlborough.

35
40 We have the best management practice guidelines now for benthic. What we're saying, and I'll come on to this again later, is we do need to develop a best management practice guidelines for water quality. We want to look at the remediation of the sites. As you've heard, the salmon farms when we vacate them, or if they are vacated, do recover fish species within about a year that the king shags prey on, functional state within about 5 years but full recover is about 10 years. There is going to be some research experiments whether removing the sediment from these sites could speed up that remediation.

5 For us, the next generation is likely to be looking somewhere different.
We've searched and searched and searched in the Marlborough Sounds
and we cannot find more salmon farm sites that would meet the criteria
of farming and seem sensible in respect of community, social and
environmental views. The transition to offshore is going to have to be
our next step. We do have research underway looking at offshore
technology but so does most of the world and no one has quite cracked
it yet, although we are hopeful in the next decade to 15 years it will
become a viable opportunity. So, potential transition to offshore and
10 potentially into land-based as well into the future is a useful way of
looking at things.

15 We are interested in continual improvement. This isn't just a one-stop
shop and we finish. There are things that will come about. There's
research on feed efficiency, for example, going on at the Cawthron
Institute. That will only improve the environmental outcomes over
time. We are looking at waste capture and how you might be able to
capture waste before it falls to the seafloor. If that becomes economic
or practicable, it should be adopted. There may be new species into the
20 future that might be fond of these types of sites.

25 For us the view is to continue to reduce competition with other users.
Improving environmental performance and the monitoring, and also
our international reputation. One of the things for us is we're only a
small producer of salmon and the reputation is very, very important.
We've been judged by some foreign people as the best salmon
producers in the world but it's a reputation that is based on reality and
it's a reality that we want to make sure that we can preserve into the
future. Improving economic performance, husbandry, climate change
30 and resilience is going to be important.

35 Much of the discussion and debate has focused on what will happen at
maximum theoretical discharges. You heard today about scenario 13
from Niall. It's a lot of nitrogen. I think we all agree there is
uncertainty about the effects of maximum feed inputs into the Sounds.
But the proposal isn't to put all of that in straightaway. The proposal is
to stage development over 15 years with at least 3 years of careful
monitoring between stages to ensure the marine environment is
40 protected.

45 The maximum theoreticals may never be reached, and I think that it's
important to say we've modelled them to see if they might be okay but
at the moment they are purely theoretical and we wouldn't advocate at
all going to those without very careful and prolonged monitoring. An
important point is monitoring may enable increased production over
time, but it may also require the production is decreased if needed.

5 This last one is in relation to the New Zealand King Salmon evidence. Agencies do not support New Zealand King Salmon's proposed changes to the stage development. They were proposing shorter durations not three years between stages, and higher feed increases at each stage. We don't support that because we feel that the place that we've come to is sensible and suitably precautionary. It is likely you probably could have what King Salmon are asking for but it's not something that we would be comfortable to support at this stage so we still support the proposal as it stands.

10 In terms of the priority order of relocating sites, the proposal does set a priority and we would like to stay at that priority at the moment. I know King Salmon said the Crail Bays were their priority to relocate but for us they're probably one of our lower priorities in terms of order of priority for relocation.

15 CHAIRPERSON: So, your position hasn't changed on that.

20 MR LEES: No, this is totally it. So, monitoring is kind of covering three things and we talk about each thing separately. Today we talked about the second one; water quality and clarity. But we've also talked an awful lot about the need for Benthic monitoring to make sure we meet the best management guidelines. And king shag monitoring I think is another one that is important and was also raised during the EPA process.

25 In terms of the Benthic environment, it would be monitored in accordance with the BMP which is best management practice Benthic guidelines. One of the things I'd like to say is monitoring of the seafloor and adjacent habitats will begin two years before any farms are relocated to develop a baseline. In reality, given the investment that would be required in a new farm, it's going to be at least two years until any farm can be moved. That two years does give us time to begin the monitoring, set up the stations, and that's not just the seafloor directly beneath the site but also adjacent habitats to make sure that we have a baseline before any farms go into the water.

30 Water quality and clarity. Water quality is about nitrogen and clarity is important for king shags. Water quality and clarity is already monitored in the Sounds, as you've seen. The introduction of new real time monitoring buoys will increase the frequency of monitoring alongside the techniques that are already in place. You heard from Dr Steve Urlich today, the vision of the need to have real time monitoring buoys to improve their temporal monitoring. At the moment, a lot of the monitoring is done monthly and it would be very useful to have real time monitoring so you can see what happens in between those months. That came from advice from the Cawthron Institute which said basically their monitoring had sufficient spatial coverage but the temporal coverage was lacking.

[3.30 pm]

5 As part of this proposal, we are looking at introducing those new sorts
of buoys and obviously in determining their location, we will work
really closely with the Council to maximise the value of that
opportunity both for the Council's role, the state of the environment
across all the activities in the Sounds but also to ensure we are properly
monitoring the King Salmon farms.

10 One of the things that's important to note is that you wouldn't move
away from the current types of monitoring, which is water samples and
these types of things around the farms, and you probably would keep
those up for quite some time. Because with modern technologies you
15 have to make sure that they are working and that they are actually
recording accurately and so you would need to maintain the current
systems of monitoring while you checked and ground-proofed the
future types of monitoring that we are looking at.

20 In terms of the king shags, there is a king shag management plan, and
Mr Schuckard was involved in its development and that resulted from
Council decisions around the requirements of the EPA. At the moment
that king shag management plan requires population monitoring every
three years. We would want to move to annual monitoring and we
25 would want to monitor not just the population count but we would also
want to monitor the numbers of breeding pairs and nests. Because in
reality, what's the important thing for the future of the species is that
they're actually breeding successfully.

30 Monitoring occurred in 2015 so they did the population count, and
there were also at that time monitoring of the nests. Obviously that
occurs again in 2018 and again in 2019 before any farms would be
relocated thereby strengthening the baseline before any farms are
moved.

35 This might help a little bit. It's a bit more visual. On the left-hand side,
you can see the three key monitoring parameters. This is presuming
consents are issued sometime in very early 2018, perhaps. Obviously,
there's going to be a minimum of two years of setting baselines, and
40 that's monitoring the seafloor adjacent habitats for the Benthic. It's the
development of the new best management and practice water quality
standards developed.

5 What we're saying is that we really want in the next two years before farms move to make sure that those water quality standards are in place. As you've heard today, there's limits of 3.5 and limits of 5 but there is a concern it doesn't tell the whole story and for us, we want to make sure that we've learned from the monitoring that's been conducted over the few years that those new farms have been in place and make sure that we have a robust best management practice for water quality to guide the stage development into the future. The annual monitoring of population and counts of breeding population continue.

10 So, 2023 first farm relocated. It might be a year later. As we've said, stage one is capped to 6,000 tonnes of input in the Pelorus Sound. Stage one commences -- for water quality, it's worth noting that stage one is about 25 per cent of the potential maximum discharge that's been modelled. 2024 to 2036, obviously stage development of production as proposed. My funny little arrows, the green, red and orange, are just saying that it won't always be up. It could well come down.

20 For the Benthic standards, there's really good sort of parameters around those. For the water quality, we want to make sure there's good parameters as well. And we want to make sure we're really carefully looking at the king shag population just to make sure that is a stable population as we believe it is.

25 Again, continued improvement in modelling. One thing about modelling is they are predictions. But as you actually go out there and you start to do your monitoring, you can actually have feedback loops into all of the models to improve them over time. As we said previously, the adoption of best practice. This isn't a one-stop thing. 30 This is like a process of continued improvement and that's something we need to advocate for, and it's something we need to continue to do to maintain our reputation.

35 There's the oversight of an expert panel. I think the monitoring and the matters that we're looking at are complex, and I think it is appropriate and it is in the plan that there is an expert panel who provides oversight and support for Council on those monitoring provisions and whether the thresholds that have been set are being met appropriately. Also, potentially on any actions that might be taken if you find you've exceeded those thresholds. 40

CHAIRPERSON: That will be a matter for the Council, won't it?

45 MR LEES: It is, but under the EPA there is a -- under the conditions, and we'll talk about that probably in a little bit, there is a peer review group who oversee, look or check all of the monitoring results that are undertaken.

CHAIRPERSON: That's the EPA. That's not this process.

MR LEES: No, but -- can you answer that one? So, in our plan we talk about the review group, don't we?

5

FE: I think what Mr Lees is trying to say is that the regulations that have been put together have, as far as possible, mirrored the conditions on the board of inquiry sites which do have that review panel in place reviewing all of the information and making recommendations to the Council about how the sites should be managed. So, that would continue if this proposal went ahead as drafted.

10

CHAIRPERSON: Are they in the D4 appendix?

15 FE: Yes.

CHAIRPERSON: Thank you.

MR LEES: As I said, it's important that you've got the scientific support to make sure that the stage of development is managed appropriately.

20

Okay, biosecurity. All the experts tend to agree that biosecurity, disease and pest risks are not increased of relocating the farms. The consent holders will be required to develop a biosecurity plan, and that's in the regulations, and that biosecurity plan would need to be independently audited.

25

MPI and the aquaculture industry and also in the process of developing a national biosecurity plan for salmon farming also. The reason you have a National Plan is because things move between regions of New Zealand, not just salmon but mostly boats and things like that and you've got to make sure you're considering the biosecurity not just at farm site but also at a bay site and also at a Sound site for size, but again, looking at it nationally as well.

30

35

Again, higher flow deeper sites would result in improved fish husbandry and disease and temperature resilience.

CHAIRPERSON: Mr Lees, are you aware that there is a report still in preparation by MPI concerning the disease problem with salmon?

40

MR LEES: Yes.

CHAIRPERSON: We had expected we would have it by now but we haven't, and I'm wondering are we going to be able to get that or what is the position with it?

45

MR LEES: Yes, so, the people who are writing the report have obviously spoken with all of the experts throughout the development of the assessments of environment effects for biosecurity. But what they do for every incident is they write a final report.

5

CHAIRPERSON: Yes.

MR LEES: This report is expected to be available perhaps later this week. The issue we faced is all of our biosecurity staff have been called off on to Myrtle Rust and the response to the Myrtle Rust, and that's why there's been a minor delay. We will endeavour to get it to you as soon as possible.

10

CHAIRPERSON: That report, remind me, is about what, again?

15

MR LEES: It's about the salmon mortalities and it's about what they found in their investigations, and the nature of how we're moving forward with King Salmon to manage those matters.

20

MR CROSBY: That's an internal MPI report?

MR LEES: That is correct.

CHAIRPERSON: But it will be published?

25

MR LEES: They are all published on the website, and we'll get it to you as soon as it comes out but as I said, there's been a delay.

CHAIRPERSON: And it will be published on the website -- can it be published on the website that the public are looking at in respect of these proceedings?

30

MR LEES: Most certainly. Yes, we'll put it in two places. We'll put it on the normal place and we'll put it on to the website specific to the salmon relocation.

35

CHAIRPERSON: All right, good, thank you.

MR LEES: King shags. King shags are vulnerable but no evidence the population is in decline. Accepted by the New Zealand Threat Classification System as a stable population. Relocation should not increase the cumulative effects on king shags. The proposal is to move farms to deeper and higher flow sites less preferred for foraging.

40

You have heard from Niall Broekhuizen and Ben Knight about water clarity effects at theoretical maximum production. Again, we're not proposing to start at theoretical maximum production. We are proposing to start at a much more sensible place and build up slowly in stages.

45

Changes to water clarity can be monitored with confidence as part of stage development. Developing new best management practice for water quality standards would include water clarity monitoring and measures to ensure water clarity is not impacted to the detriment of king shags.

Landscape and natural character; I'm just going through the key issues and I'm sure you're aware of them. There are wide-ranging expert views on landscape and natural character values, and how salmon farming might affect those values. The two proposed blowhole point sites are probably the most controversial. That's my reading from looking at the submissions but you may feel otherwise.

Under the operative RMA Plan, these sites are not in areas identified as outstanding, but under the proposed Plan they are within the proposed outer sounds outstanding natural landscape and proposed outstanding natural feature. I'd just like to say the potential sites were chosen as much as possible to be in areas that are already modified by existing aquaculture. They are not pristine. They're offshore of existing mussel farms.

Also, just to note again that the proposed farm circular cage structures are also less intrusive than the current farms that you see out in the Marlborough Sounds. In terms of the two blowhole points, they will use much less -- well, less visually intrusive structures in their design so they'll use the circular cages rather than the steel cage designs that are there are the moment. I think the key of it is to say that we chose these areas because they were in areas that were already developed and utilised.

The Panel need to exercise judgement given the range of different views but we hope that you would consider the scale of the landscapes in question and the values that would be affected by those proposed farms.

Tangata whenua, Māori. You have heard the specific concerns from Ngāti Kuia and Ngāti Kōata. At the beginning of the hearings you also heard the views of Te Ātiawa and as we've said, they have an interest in the Tio Point site in Tory Channel. On Wednesday, iwi through TOKM's presentation have asked, if you recommend relocation, that BMP water quality standards are developed as soon as possible. And we're saying the same thing; they really need to be developed quickly.

5 They suggested at least two years of baseline monitoring occur at the new sites, and the plan is to do at least two years of baseline monitoring. They've also said that New Zealand King Salmon remediate the vacated sites. As I've said, there is research looking at that as an opportunity and these actions can be accommodated that iwi have requested within the plan change and most already are. New Zealand King Salmon are required by their existing consents to remediate vacated sites also.

10 The one reason we want to undertake research is just to ensure the remediation actually results in a better outcome because you are removing the surface layer and potentially the creatures that live in the surface layer, and those creatures are often the ones that would naturally over time return it to a state and you just want to make sure you don't actually slow recovery down by removing the fauna and flora.

15 Iwi have also asked that they are represented on a group established to have monitoring and compliance role of consent conditions. This suggestion has merit. As we mentioned, the regulations propose a peer review group consistent with the EPA and we would certainly support tangata whenua participation.

20 They also suggested that New Zealand King Salmon look at best practice farming over and above the current standards. Again, as I've said, agencies support a process of continued improvement and the adoption of the best technologies.

25 In respect of the request iwi have preferential access to one of the proposed sites, Government is looking for a good outcome socially, culturally, economically and environmentally. We would welcome your recommendations on this matter if you see this option enabling an overall better outcome.

30 This is in respect of the request that iwi have a site and they have a three-year option on taking that site and deciding if they wish to have it. If you see that as something that could result in a better outcome, we would be interested in your recommendations.

35 CHAIRPERSON: Do you mean one of these sites?

40 MR LEES: That's what they have asked for, yes. That's our understanding.

CHAIRPERSON: Do you mean at the Hui last week? I'm trying to think who that was, now.

45 MR LEES: That was TOKM, I understand. Laws Lawson from the trustee who had authority to speak on behalf of the iwi. He raised a number of issues and among those was one a three-year option on one of the sites if you decide to recommend any move.

5 Just out of that, we're noting there is an aquaculture settlement, obviously, and the aquaculture settlement regional agreement in Marlborough has been signed but the agreements can be varied if all parties concur.

10 Iwi have requested that sites are relocated with no increase in production also. This is a matter for the Panel's judgement but Government considers increased production should be allowed if it is sustainably managed.

15 That's really me. The Minister for Primary Industries, who's also the Minister for Aquaculture, looks forward to receiving your recommendations and reports. In line with your terms of reference, there may be a number of ways under the RMA or a number of options under the RMA that might -- let me start that again. It may be that there are a number of options for relocation that would meet the requirements of the RMA and it may be that there are a number of ways that you can get better outcomes for everybody, or there may be compromises. All we're asking you is to have a think about how you might achieve the best outcome from this proposal. That was me. Thank you very much.

[3.45 pm]

25 CHAIRPERSON: Thank you.

MR CROSBY: Just a few questions if I can, Mr Lees.

30 MR LEES: Sure.

MR CROSBY: One of the -- have you got the proposal in front of you or not?

MR LEES: Yes.

35 MR CROSBY: You have, good. Could you turn to page 80? Just at paragraph 3 under appendix D4 under the heading Occupancy, "The occupancy and activities shall be limited to the area shown on the Plan at appendix D7". There doesn't seem to be any appendix D7 of relevance in terms of plans for the proposed sites.

40 MS LOJKINE: Appendix D7 hasn't been prepared to date because of this public consultation process resulting in, I guess, recommendations to the Minister about which sites might proceed. Appendix D7 is intended to be a replication of the Marlborough District Council planning maps so it would show the areas zoned as customary marine zone 4 and, in fact, I think from memory - I may have misspoken at the beginning - they are actually up on the MPI website. It's just that they weren't able to be included in this document.

45

MR CROSBY: So was that that larger level of the plan documents?

MS LOJKINE: Yes.

5 MR CROSBY: But not the detailed plans as we have for the older sites at the back?

MS LOJKINE: Yes.

10 MR CROSBY: Right. Just in terms of the buoys, the only reference I can see to them is at - again appendix D4 - condition 32, page 85. Is there any other reference to them?

MS LOJKINE: No.

15 MR CROSBY: So that's just stating any effects on water quality from the process outlined in the conditions above and shall be monitored following the process outline, conditions 43 to 45, and using a minimum of six real time monitoring buoys deployed at sites determined. How does that get imposed in a realistic sense as a condition for consent?

20 MS LOJKINE: I think that's the discussion you were having earlier in the day with Mr Davies about how these standards might be transferred into consent conditions. What our standards 43 to 45 cover, the Marine Environment Monitoring and Adaptive Management Plan, which do set out the monitoring locations. And I had envisaged that it would be through that plan process that the locations for the real-time monitoring buoys would be selected in consultation with Marlborough District Council.

25 MR CROSBY: Is there any other reference in the policies to the real-time monitoring buoys?

MS LOJKINE: No.

30 MR CROSBY: They are a fairly major part of the monitoring process, aren't they?

MS LOJKINE: They are, yes.

35 MR CROSBY: And this is the only reference that we will have in the Plan chance to it?

40 MS LOJKINE: Yes.

45 MR CROSBY: You wouldn't think there to be some benefit from having that referred to either the necessity to have these standards applied as conditions for specific -- and/or specifically referring to the monitoring buoys?

MS LOJKINE: Yes, I think there is merit in both suggestions.

- MR CROSBY: Right. At page 72, policy D, there is a policy that salmon farming will achieve the following condition of water quality outcomes in the water column, (d) to not cause elevation of nutrient concentrations outside the confines of established natural variations of location and time of year and then it says, "Beyond 250 metres from the edge of the net fence". Now, to not cause elevation of nutrient concentrations, on what we've seen that just can't be achieved within 250 metres at high flow sites. Some of the plans, some of the water quality modelling plans show distances of 500 metres plus for a depositional footprint of alleviated concentrations.
- MS LOJKINE: It sounds like the depositional footprint, Mr Crosby, or water quality effects.
- MR CROSBY: Well, I imagine it's a mix of both in that what's been carried away is then, in the end, reaching the seabed. But whether that falls in that technical definition of the depositional footprint in the benthic guidelines I'm not sure. But what we're concerned about is a provision that appears potentially not able to be achieved.
- MS LOJKINE: So to start it would be fair to say that Mr Knight and Dr Broekhuizen are probably better to advise on this than me, as they are the kind of major scientific advisors. From my perspective in coming up with this policy, I guess there are two things that are relevant. The first is that it is based -- in fact, it is pretty much a replication of a consent condition that is on all of the existing Board of Inquiry sites, which I didn't see appropriate as a consent condition because of difficulties in enforcement and compliance with it, which is why I recommended that it be included as a policy in the plan change.
- Secondly, my understanding of Dr Broekhuizen's modelling work is that the areas of the sounds where you would see the elevated nitrate concentrations are a long way removed from the net pens and so I see the difficulty with this condition, and it would be determining whether it was in the confines of established natural variation. I guess the size of the increases in nutrient concentrations that were being talking about would be difficult to see them as being outside natural variation as a result of the modelling.
- MR CROSBY: All right. Then finally on that same page, (e), we had a question which I think Mr Dormer raised, I'm not sure if you want to raise it, Alan, or I can just raise the question of the use of the phrase "to not cause a statistically significant shift". We are really wondering what on earth does that mean?
- MS LOJKINE: I'm afraid in that case it will definitely need Mr Knight and Dr Broekhuizen. Again, that has come from the Board of Inquiry discussions that resulted in that particular set of water quality outcomes.

- MR DORMER: My recollection of what statistically significant means refers to the 2.5 per cent at each end of the traditional bell curve.
- 5 MS LOJKINE: I'm afraid it's not within my area of expertise, Mr Dormer.
- MR LEES: Would it be okay if Ben responds?
- CHAIRPERSON: Yes, please do.
- 10 MR CROSBY: So probably both those questions have been deferred to you, Mr Knight, do you want me to run over them again or not?
- MR KNIGHT: I think I understood them both. Yes, one you were saying about the 250 metre shift and the other one was about the statistically significant shift?
- 15 MR CROSBY: Yes.
- 20 MR KNIGHT: So I actually have to interact quite a bit with these consent conditions as part of my roll and the monitoring of the recently consented farms. The way I see them is they are sort of written in a way that they provide broad water quality objectives and those are the ones that you are referring to there. And the way I see those is they can be a little bit fluffy. They are the ones that sort of really give the overall vision for we are going to operate these salmon farms but we are not going to have effects that people might notice in the environment. And I think they need to be sort of generally quite broad so that they're easily understood without getting too specific. So the second tier is below those water quality objectives, water quality standards and they are things like the 3.5 mg per cubic metre of chlorophyll. That's the standard and it sort of gives a level of enforcement to changes that -- right, they're sort of hard limits, you can't really go over those for more than a couple of months otherwise you're going to have to investigate further and if it's proved that it's a farm effect you need to do something to your farm.
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- 35
- 40 But I do have some concerns with the way they are written. Those water quality objectives I think are almost trying to be water quality standards in the way that they are written and I've always felt that a statistically significant shift should really be replaced with ecologically significant shift. Because then it can incorporate wider things that come out in future. For instance, Mr Schuckard's potential issue with visual environment for feeding shags. So I think by having sort of broader definitions at that objective level you could open up or make an easier path to bring in new standards which address specific concerns in future.
- 45

5 With respect to the 250 metre limit level, I think what that was really
trying to say is just looking at the water column environment. So I
guess technically you could have a process whereby nutrients make it
10 into a phytoplankton that is grazed or maybe it dies, somewhere else in
the Sounds it falls to the seabed and is broken down and those nutrients
are released. So you could end up with quite distant nutrient releases
that are indirectly associated with the salmon farm. So I think having
some clarity around that so that it is specifically talking about dissolved
nutrients may help to clarify that objective. Because I think that it's
really trying to say that the dissolved first emission waste from the
farms will be limited to that area around the farm. At the moment I
don't think that's clear.

15 MR DORMER: You say "could end up", my understanding is that it would have been
better expressed "would virtually inevitably end up". There is no way
that 250 metres can be complied with on my understanding of the
evidence.

20 MR KNIGHT: Yes, and whether that limit needs to be looked at and discussed --

MR DORMER: Well, if it can't be complied with it's got to be looked at, doesn't it?

25 MR KNIGHT: Well, I guess our monitoring has shown that it is being complied with
but the way the monitoring is set up is we monitor at the net pens and
then downstream of the net pens. So it is possible that we may miss
the plume.

MR DORMER: It is being monitored in that distance for dissolved nutrient levels?

30 MR KNIGHT: Yes, that's right and total nitrogen --

CHAIRPERSON: No, it doesn't, it doesn't say that.

35 MR DORMER: It doesn't. The policy does not confine itself to dissolved nutrients,
does it?

MR KNIGHT: No. No, the objective --

40 MR CROSBY: So why would you define it? Why would you confine it? A normal
reader is not going to confine it to dissolved nutrients.

MR KNIGHT: Yes. I think you're correct that it would need to be defined more
sensibly for in effect --

45 MR CROSBY: Well, if I just read that to you again and you listen carefully to the
wording, what we are challenging you really is what do you say, as a
scientist, is really the aim of that objective and what words would
achieve that aim. So I will read the sentence to you again:

"So as to not cause elevation of nutrient concentrations outside the confines of an established natural variation for the location and time of the year beyond 250 metres from the edge of the net pens."

5 MR KNIGHT: I take that to mean the water quality environment from a nutrient perspective will not change in a measurable sense outside of the --

MR CROSBY: So we need to insert the words "water column"?

10 MR KNIGHT: It says "water column" actually at the top there, yes.

MR CROSBY: Oh, I see what you mean, in the introductory words?

MR KNIGHT: Yes, yes.

15 MR CROSBY: Okay.

MR KNIGHT: But it still probably could be clarified, I agree.

20 MR CROSBY: No, no, I take your point.

MR DORMER: That's a significant answer to it.

MR CROSBY: It is, yes. Thank you.

25 MR DORMER: You saw something the lawyers never saw, well done.

[4.00 pm]

30 CHAIRPERSON: Just stay there in case.

MR KNIGHT: Okay.

35 MR CROSBY: No, in fact you have covered between you all the points I had. No further questions, so thank you.

CHAIRPERSON: Ms Lojkine, if we go back to D4 again, were you here this morning when Ms Ferguson --

40 MS LOJKINE: Yes, I was.

CHAIRPERSON: She questioned the noise condition --

MS LOJKINE: Yes.

45 CHAIRPERSON: -- and whether it should be L10. Do you agree with that?

- MS LOJKINE: I am happy to be guided by Ms Ferguson in relation to that matter. I had a hasty conversation with Mr Hawes while Ms Ferguson was making those points to check because that standard had come from both the Board of Inquiry consents and from the recently issued Te Pangu consents, both of which do actually specify an L10. But if Ms Ferguson's advice is that the LAQ is the better measure to use then I am quite satisfied that that would be appropriate.
- 5
- CHAIRPERSON: That surprises me a bit because the references to a 2008 national standard, the Board of Inquiry was after that, wasn't it?
- 10
- MS LOJKINE: Yes, it was 2011/2012 and, yes, I checked both documents this morning because I also was surprised at what Ms Ferguson said.
- 15
- CHAIRPERSON: Yes, well we might have to look a bit closer at that.
- MR CROSBY: Sorry, one further question, Mr Lees. At Te Hora we had very serious complaint from the iwi that in essence they had been shown a number of sites for iwi consideration, that they had then been told that there were no suitable sites, in essence, over a period of time, that they negotiated a settlement with the Crown, that that process of requiring mandating of the agreements, the regional agreement that was entered into or that was in draft form required them going to back to their nine iwi and reaching an agreement, which was a long attenuated process. Then a further meeting, at which, as I understood the evidence, that settlement agreement was entered into with the Crown. The assertion was made that two days prior to that signing occurring the iwi were told for the first time, having earlier been told that section 360A was not available to them and that they were told for the first time that they had the opportunity potentially of asking for section 360A to be applied. What is the Crown's response to that?
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- MR LEES: Okay, so I mean this is a very, very complicated matter and there's a lot of timing issues here, but in essence, what was it, in 2015 we had a Treaty settlement obligation with Te Tau Ihu. The Treaty settlement post the 2011 Act law reforms is actually based on a forecast. So it is the first ever prospective settlement. And what it does is we forecast growth out as far as we all reasonably agreed we could, which is to 2035, and the forecast for Marlborough obviously had mussel growth, it had oyster growth but it had 136 hectares of salmon growth. And obviously the obligation under the Treaty is that 20 per cent of that space could go to Te Tau Ihu. And Te Tau Ihu had the choice. Obviously there are nine iwi involved because Ngai Tahu's boundary comes in here too, whether they agreed to take it as a cash settlement or whether they wished to have space or a combination of those things, or something else agreed to with the Crown.
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Obviously for space, and a lot of iwi had a desire for space around the country, we went out and we started a hunting. This is just after the EPA Board of Inquiry process. So we had seen the controversy that was raised there and we obviously had some understandings about the sorts of issues that were likely to come up or be potentially more concerning to people. We hunted for a whole range of sites. Originally we searched for, I think, five or six sites in Tory Channel and we only managed to eventually find one which was the Tio Point site. Sites in Tory Channel were primarily rejected because of navigation with the Interisland ferries but also pretty much everywhere you go in Tory Channel there is a biologically or ecologically important reef very close or underneath where the farm sites could potentially go. So at the end of the day we only had one in Tory.

We actually kept looking in Pelorus Sound and we actually originally went through over 100 potential sites and we listed them down and we reduced them down. There were surveys which originally occurred and they identified three potential sites which were all gazetted freely at that time. I note they were all enclosed areas. And sites were continued to be hunted for over the next year, which were all again in prohibited areas because the problem with salmon farming is that it does require strong currents and it does require high flows and these are often areas that were currently in the plan as it stands today in prohibited areas. So we never said no to iwi on those prohibited areas, all we said is that if you went it alone it would be a very hard ask. And an issue for iwi at that time is that if you went for space and you obviously got a top up for your consent, in this case it would be a plan change as well, that that could actually affect -- if you were unsuccessful in that application, that could affect your Treaty settlement because you wouldn't get that money back.

There was what we call an insurance scheme but that's very blasé, but it basically said this is the quantum value of your settlement, if you use some of it on getting space you can still access the remainder but that did come in quite late in the process and I think what we're saying is there was an ongoing negotiation throughout this entire period. King Salmon appeared and there were discussions, long-winded discussions with the council for quite some time around how do we implement the benthic standards and a proposal did come from King Salmon to Minister Smith. But at that stage we were very much, "Look, Mr Smith, we've hunted and hunted and we found some site but there might not be enough to relocate King Salmon because we've got to make sure they're all environmentally sustainable and suitable and we don't know that until we've gone through the processes, but also iwi have one". And the intent was always that a site would be available for iwi if they did wish it.

5 Even today, that was always our goal that if we can provide iwi space that is the Crown's preference. It probably wasn't perfect because of the way things evolved over time, but iwi were aware of section 360 and have been asking questions of Ministers around those matters. This is generally in a national context. And the Minister said at that time that obviously there's a lot of things you have to consider in making the call to progress use of the section 360 regulations and it would all depend on the case ahead of us. And at that time, obviously, we were looking for King Salmon at the same sort of time. But iwi came to us in about May 2015 - don't quote the date, sorry, I'm just running this off my head - and at that point it was more that they were looking at a cash settlement so we continued. And the thing for us is we were actually still hunting for sites and some of the sites that came up in this process were actually identified post that point of them saying that they would like a cash settlement. I guess we've always wanted to find iwi sites if we could at all but, at the end of the day, I think the way the process worked out iwi were very close to having to go through their process of governance to get the decision that they wanted and they made a call to go for cash based on what they knew at that time.

20 We did make sure that we wrote to iwi to let them know that relocation was being considered for New Zealand King Salmon, that we were considering it in very early stages, and it was a couple of days before they finally signed the agreement and by that time their view is that it was too late for them to change their minds.

30 Obviously we continued looking and it was another couple of years later that we finally got approval by Cabinet to actually even look at the regulation making powers. So I guess our response back in 2015 that we were considering it but we didn't know whether we could use it and it would require an awful lot of consideration is supported by the fact that it was another \$1 million at least spent on assessments of environmental effects post that time. There was a whole -- we set up the Marlborough Sounds Salmon Working Group to consult with the community and talk with the community, but there were a lot of processes that went all the way through until October/November, December last year when Ministers finally agreed to consider the proposal and consulting on this particular proposal.

40 So I think the Crown is talking to iwi now on the settlement aspects and we're interested on their views on whether they would like the space or whatever their opportunities might be and how we might provide it for them. And that's about all I can say at this stage.

45 MR CROSBY: Right, thank you.

- CHAIRPERSON: I think we were told - but whether this is right or not I am not sure, I would have to check the transcript again - and the impression I go from what we were told was that they asked because there would be difficulties in establishing sites in prohibited areas. Iwi asked if the Minister would use his powers under section 360 and they were told he wouldn't, and then, lo and behold, some little time later, he is using them for New Zealand King Salmon and iwi question why that should be.
- 5
- 10 MR LEES: Yes, the request to the Crown came nationally as part of the negotiations. So this is from the trustee which all iwi had been part of the development and asked a range of questions of the Crown. One of those was, "Would you be open to use section 360?" Obviously our response, as I said, at that time was that the Minister had a power but it required an awful lot of consideration before you would use that power of the circumstances in each case. As I said, it took another couple of years at least with King Salmon going through all of the AEEs before we even got to a point where Ministers actually agreed to take this proposal forward.
- 15
- 20 CHAIRPERSON: But the impression we got from the presenters on the marae was that it was a flat no.
- MR LEES: That's not my understanding.
- 25
- CHAIRPERSON: All right. I just have one other question for you, Ms Lojkine. You heard our discussions with Ms Ferguson this morning particularly about these D4 standards and conditions of consents. It has transpired today and Mr Davies has told us that King Salmon would accept one consent for what we will call the Waitata ones - whatever might come out of that and we haven't made those decisions - and one for Tory Channel. The suggestion is that the consents should mirror, to some extent anyway, the standard or these standards should be included as conditions of the consents themselves. What do you say about that?
- 30
- 35 MS LOJKINE: I agree with Ms Ferguson and Mr Davies that having one consent document that contained all of these standards would be the most efficient and effective way forward.
- 40 CHAIRPERSON: So why do we have D4 in the Plan?

MS LOJKINE: There were a variety of options that were considered in drafting the regulations. The reason in the end for including the details standards in appendix D4 was to attempt to address community uncertainty following the Board of Inquiry process that if further salmon farm sites were being considered, it was seen as important to provide the community with a level of certainty that the same standards that applied to those sites would apply to any of the relocated sites. And a way of doing that was seen as being to include them as rule standards in the plan so that New Zealand King Salmon, or a consent applicant, in fact making an application under the restrictive discretionary rule would be saying, "I will be bound by these standards. This is the way that I will behave".

(off mic conversation)

[4.15 pm]

MR DORMER: If you favour one consent applying to all the companies found in the Waitata Reach, how many farms is that going to be, assuming, for the moment, that this application is entirely successfully?

MS LOJKINE: So in terms of the way the regulations are written at the moment, it would be the number of relocation sites in Pelorus Sound that it would apply to.

MR DORMER: That's five.

MS LOJKINE: Yes.

MR DORMER: And how many more farms does King Salmon have there?

MS LOJKINE: If the recollection proposal goes ahead in total? In addition there would be the Waitata and Kopāua sites in Pelorus Sound.

CHAIRPERSON: Those are the ones that are already there, are they?

MS LOJKINE: Yes.

MR DORMER: So that would give you seven?

MS LOJKINE: Yes.

MR DORMER: And you favour a procedure whereby the company holds one consent in respect of those seven sites?

MS LOJKINE: This may explain some of the misunderstanding. When Professor Skelton asked me I favour these rule standards applying to consents for the sites.

MR DORMER: All seven?

5 MS LOJKINE: No, to the five sites that are part of this process. Mr Davies has suggested to you that one consent could be issued to cover all five of those sites. That is possible under these regulations. The other way I have seen this sort of thing done would be, for example, in water permits where are combined volume of water, a cap on a volume of water, is set across linked consents that are hailed by the same consent holder. There are consent conditions that say this consent in co-ordination with this other named consent shall not exceed this volume of water.

10 MR DORMER: Our Chairman will know about that because of water caps in Canterbury.

15 MS LOJKINE: Yes, and it's a Canterbury example I'm thinking of, yes.

MR DORMER: I have never quite figured out how that can work properly but presumably it does.

20 MS LOJKINE: For it to work, all of the consents do have to be held by the same consent holder, which is not necessarily a kind of guarantee here.

MR DORMER: Forgive me, I gather you had it across different consent holders.

25 MS LOJKINE: No.

MR DORMER: No. And we could get the consents for the present two, when do they have to be -- when do their consents expire?

30 MS LOJKINE: They got 35-year consents, so I believe they expire in about 2045 or 49, according to Mr Davies.

MR DORMER: That is too long to wait.

35 MS LOJKINE: I guess the way that was seen as dealing with that was to make these rule standards and therefore the consent conditions for the new sites match as closely as possible the existing sites so that there wasn't a mismatch in the way they were being managed.

40 MR DORMER: Yes. I can't take that any further. Thank you. Who knows, it might not be even relevant.

MS LOJKINE: Indeed.

45 CHAIRPERSON: All right, thank you all very much. That concludes our questions.

That brings to an end these public hearings on this proposal. I, again, wish to thank all those who have taken the trouble to come and discuss their concerns with us or their proposals with us over the weeks that we have been here. We are grateful for that.

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We will now complete the hearing process for the purposes of considering our report and recommendations to the Minister for Primary Industries. I should make it clear, that in the terms of reference that we have as a Panel our report goes to the Minister and it is for the Minister to decide if and when he will make it public.

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So it is not part of our function to publicise our report. Our terms of reference make it very clear our task is report and recommend to the Minister, it is then for the Minister to decide what happens to that report.

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Our function now is to complete what I am sure is going to be quite an arduous task for us, the report and recommendations based on everything that we've read and everything that we have heard over these last several weeks. So we conclude with that and thank you again for those of you who have been attending these hearings.

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We will retire.

25 MR DORMER:

I wish.

MATTER CONCLUDED AT 4.20 PM

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