

**BEFORE A DECISION-MAKING COMMITTEE  
OF THE ENVIRONMENTAL PROTECTION AUTHORITY**

**Under** the Exclusive Economic Zone and  
Continental Shelf (Environmental  
Effects) Act 2012

**In the matter of** an application for a marine  
dumping consent to dump dredged  
material at a deep-sea site east  
of Great Barrier Island

**By** **Coastal Resources Ltd**

Applicant

Held in the Kiwi Ballroom at the Jetpark Airport Hotel  
and Conference Centre, Auckland, commenced Tuesday,  
28 November 2018 at 9.25 a.m.

**Board Committee Members:**

Basil Morrison (Chair)

Mark Farnsworth

Gillian Wratt

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9.25 a.m. Miki Whakatau - Gavin Reedy (EPA)

(Hearing adjourned from 9.30 a.m. to 9.41 a.m.)

5

#### OPENING REMARKS

10

**CHAIR:** This Decision-Making Committee has been convened by the EPA to hear an application from Coastal Resources Limited to authorise the disposal of 250,000 cubic metres of dredge material per annum at the Northern Disposal Area to the east of Great Barrier under the Exclusive Economic Zone and Continental Shelf Act 2012.

15

Good morning, I'm Mark Farnsworth, I am the Leading Chair.

20

But first, a commercial break, health and safety.

25

**MS IOANE:** Thank you, my name is Tuf, I am your Hearing Manager for today. Just a few health and safety points before we start. Please ensure that you sign the register over there as you come in. Please turnoff all your cellphones. Please note that these proceedings are being recorded, so please speak into the microphone when you do your presentation. In the unlikely event of an emergency, an alarm will sound continuously, please leave the venue through the main door there and then assemble in the carpark just outside the main entrance over there.

30

In the event of an earthquake, drop, cover and hold.

Get under a table and wait for further instructions.

Toilets are just directly opposite through the little corridor there and then there's another set of toilets just by the lifts opposite reception. If you  
5 have any issues, please don't hesitate to come and see me or Gen.

**CHAIR:** I am an Independent Hearing Commissioner living in Mangawhai in the north. I have a little bit of history in this field having heard hearings under  
10 RMA since the Town and Country Planning Act.

So, now an introduction from our panel starting with on my right.

**MS WRATT:** Kia ora katou, I'm Gillian Wratt. I am the EPA Board member on the DMC. I am based in Nelson  
15 and I have a science background. I have been involved in several other EPA DMCs.

**CHAIR:** Basil.

**MR MORRISON:** Kia ora, my name is Basil Morrison and I live in a town called Paeroa where I was born and I  
20 have been involved in the farming, dairy farming industry life and I've been an elected representative both local, regionally, nationally and internationally. Like Mark, I started under the Town and Country Planning Act and I am a  
25 Hearings Commissioner for the Auckland Council and the Waikato Regional Council and Thames Coromandel, kia ora.

**CHAIR:** So, starting with the applicant, I want you to introduce yourselves.

30 **MR SLYFIELD:** My name is Morgan Slyfield. I am legal counsel for Coastal Resources Limited and I will run you through the other members of the team who are here. To my left is Simon Male, who will be giving evidence for Coastal Resources Limited.

Behind me, immediately behind me is Mr David Hay who is the planning witness for Coastal Resources Limited. To his left is Simon West who is giving evidence on matters of ecology for CRL. And down  
5 the back holding up his hand there is Connon Andrews who is giving evidence on sediment dispersal and oceanography. Right in the back row is Mr Childerhouse who is giving evidence for CRL on marine mammal matters. And the others that you  
10 see seated here are either part of CRL or associated with CRL I think and interested in the proceedings but you won't be hearing from them.

**CHAIR:** They can introduce themselves because I like to know everyone in the room.

15 **MR THOMPSON:** I am Mark Thompson and I run Dredging New Zealand, so we basically take the sediment to the site. So, I'll be presenting on Friday.

**CHAIR:** Enjoy the process.

20 **MS STICHBURY:** I am Mary-Ellen Stichbury and I do the administration for the CRL.

**MR RIDDELL:** Good morning, I'm Steve Riddell, I am a Director of Coastal Resources Limited.

**CHAIR:** Welcome. Okay, Department of Conservation?

25 **MS ARTHUR:** I'm Bronwyn Arthur, I am the counsel for the Director-General of Conservation and I will ask the others to introduce themselves.

**MR RIDDELL:** Kia ora tatou, Andrew Riddell, I am a planning consultant.

30 **MS HUCKER:** Good morning everybody, I am Sarah Hucker, I am a planner for DOC based in Wellington National Office.

**CHAIR:** EPA, can we start with you?

**MS HADEN:** I am Celia Haden, I am with the Environmental Protection Authority and I am counsel assisting the

DMC.

**MR FAITHFULL:** Luke Faithfull, decision support writer.

**CHAIR:** And starting over here, please. You have introduced yourselves and you are commercial.

5 **MS HEWETT:** And I am Gen Hewett, I was introduced before as well, I've probably met most of you already.

**MR MOGINIE:** I am Ben Moginie, I am an adviser at the EPA and I am here to assist them with the running of the hearing.

10 **MS HOFFMAN:** I am Helen Hoffman, I am taking a transcript of today's hearing.

**MS FRAME:** I am Priscilla Frame, I work for Edwards and I'm doing the AV.

**MR McFADGEN:** I'm Don McFadgen, I am an interested  
15 onlooker.

**CHAIR:** We will end up with the press hopefully.

**MS GREGORY:** I am Erica Gregory, I am with the Environmental Protection Authority and I am in their Kaupapa Kura Taiao team.

20 **MR WARDLE:** I am Mark Wardle from the EPA, I work in the communications team.

**MS GIBSON:** Hi, I am Eloise Gibson, I am a science journalist for newsroom.co.nz, I am here also as an interested person and I will be writing something  
25 for the media.

**CHAIR:** I am just going to take a few seconds to talk about the process of what we're going to do. CRL are going to put their case to us, we're going to be able to question the various witnesses. Other  
30 people have indicated that they want to also question witnesses. In this case, we will allow the others to question the witnesses first before we question them because that may actually, rather than - it may cover all of our questions at the

same time.

EPA staff, if there are other questions, EPA staff will handle requests for other questioning, so don't go directly to the Chair, go and see the Hearings Administrator if you want anything further.

Submitters will then have their opportunity to present their cases or make their representation and then finally, at some stage, there will be closing from the various parties, I think DOC and the applicant.

The rules of engagement, I have two very simple rules, and they are very limited; respect and attentive listening to the speakers at the time. And I am really strict on that.

The second one is, turn your cellphones onto silent please. The new modern phones are very disruptive. You can have your fix at lunchtime and afternoon tea but while we're here, let's concentrate on the matters that we want to hear.

So, the DMC is going to consider an application for marine dumping under 20(g) of the Act and there are matters that we must take into account and matters which we must have regard to and we are going to work from.

So, the effects on the environment, existing users, human health if we actually grant the consent, the importance of protecting biological diversity, the nature and effect on other marine management regimes, the alternative methods that we consider, the practical options to reuse, recycle etc. of dredge material and, to the extent which conditions can avoid, remedy and mitigate any effects. This is not an RMA hearing. This is an EEZ hearing. It's taken me a while to get my head around that and the process. And other laws and regulations that may apply.

In terms of having regard, we must have regard to

the evidence and the submissions that are being put before us, and of course all of the information we sought. That's been an interesting process. Very iterative. Since this was advertised, DMC have been questioning, by way of Minute, the various parties to elicit as much information and narrow the issues. In fact, in coming to this hearing, the issues have got very narrow now and that puts us in a very unique position. If I had my way, I would adjourn, put you in a room and say sort it out, but that's not quite the process, I've been told I've got to be good and not change things.

And then finally, we have to test the application according to 60, ensuring that we have had adequate information to determine whether the application meets the purpose of the Act which is sustainable management of the EEC and protecting the zone from pollution.

So, that's our role over the course of the next day and weeks. Okay. Any questions before I sit down and we proceed to hear the applicant's case?

Mr Slyfield, we are in your hands, thank you.

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**OPENING SUBMISSIONS ON BEHALF OF COASTAL RESOURCES  
LIMITED BY MR SLYFIELD**

5

**MR SLYFIELD:** Thank you, Mr Chair, members of the DMC.

There is a written opening legal submission for CRL which is making its way to you now. (Document distributed). It does go on for some 42 pages and I will be endeavouring not to go through every single part of it because it really is an outline of all of the key matters that CRL thinks are alive for the purposes of this hearing and you probably don't need to hear from me at the outset about all of those.

15

(Mr Slyfield reads paragraphs 1-4 of opening submissions)

I might interpolate there. That is a feature of some of the dialogue that has occurred since the application was filed, specifically dialogue with the Department of Conservation.

20

(Mr Slyfield reads paragraphs 5-14 of opening submissions)

Before I get into the legal framework, I want to outline some of the relevant history.

25

Disposal of dredged material in the Auckland region.

(Mr Slyfield reads paragraphs 15-20 of opening submissions)

I am going to address those in a moment.

30

(Mr Slyfield reads from paragraphs 21-23 of opening submissions)

I am conscious there is a consent under consideration at the present time. Mr Hay will provide you with some further comment on that.

(Mr Slyfield reads paragraphs 24-27 of opening submissions)

I can interpolate there perhaps. The last consent that was granted, and that was under Maritime  
5 New Zealand's authority, so before the transfer to the EPA of these responsibilities occurred, was in 2014, mid-2014, and it allowed dumping of an amount, I think up to 14,000 cubic metres to the end of December 2016, and the dumping in fact came to an end earlier in 2016, in  
10 fact.

The evolution of the Northern Disposal Area.

(Mr Slyfield reads paragraphs 28-31 of opening submissions)

I have made that point because I think it's  
15 important to recall that although there is a deemed marine consent, that wasn't considered against any of the assessment matters that you are considering this application. It is considered under different legislation.

20 The relevance of CRL's deemed marine dumping consent.

(Mr Slyfield reads paragraphs 32-36 of opening submissions)

I am going to dwell on that for a minute.

25 (Mr Slyfield reads paragraphs 37-42 of opening submissions)

If it assists for me to emphasise, it's not necessary to achieve that outcome, that there be an approval per se at the characterisation stage by the EPA,  
30 which is a matter I will return to.

Turning next to the legal framework.

(Mr Slyfield reads paragraphs 43-47 of opening submissions)

So, now I'm going to go through each of those three

groupings. The first of those, as I mentioned, is the statutory guiding group beginning with the purpose of the EEZ Act which is set out in section 10(1). I won't read that to you. I also won't read to you the definition of sustainable management which is obviously related but I  
5 make three observations on those provisions.

(Mr Slyfield reads paragraphs 51-54 of opening submissions)

**CHAIR:** Although part 2 is taking a hammering in recent  
10 times.

**MR SLYFIELD:** Taking somewhat of a back seat, is it in or is it out?

(Mr Slyfield reads paragraph 55 of opening submissions)

15 Turning then to those information principles in section 61.

(Mr Slyfield reads paragraphs 56-62 of opening submissions)

20 The reason that I've mentioned stony corals and the reason there is some focus on those, is because of their listing in the Act.

(Mr Slyfield reads paragraphs 69-84 of opening submissions)

25 There may be some irony with the length of time I have spent talking about it, notwithstanding the idea that it's supposedly simpler and more clear than the precautionary principle.

(Mr Slyfield reads paragraphs 85-103 of opening submissions)

30 That deals with all of the higher order provisions that I have been calling statutory guidance and I turn now to the more detailed provisions. Statutory assessment criteria.

(Mr Slyfield reads paragraph from 104 to middle  
paragraph 114 of opening submissions)

As assessed in the Market Economics report, which  
was lodged yesterday and which you may not yet have had  
5 time to familiarise yourself with, both of these  
activities are of a scale and significance that give rise  
to economic consideration on a national scale. It would  
also be consistent with the economic elements of the  
Act's purpose (to promote enabling of people to provide  
10 for their economic well-being) to take such economic  
factors into account.

(Mr Slyfield reads paragraphs 115-118 of opening  
submissions)

That is on the conditions as presently drafted.

15 (Mr Slyfield reads paragraphs 119-120 of opening  
submissions)

I can add there that there has been some advance on  
that suggestion overnight as a result of the Planning  
Conference. I won't deal with that in any detail. You  
20 can hear about that when we get to Mr Hay's evidence  
later today. It doesn't dispense with those values but,  
in short, the notion is that, given we've got a defined  
list of contaminants, we can reproduce the actual value  
figures into the conditions of consent which will make an  
25 administrator's job much, much easier than going and  
looking up those values.

(Mr Slyfield reads paragraphs 121-125(a) of opening  
submissions)

(Correction made to paragraph 125(b) to read as follows:)

30 "At 500m there are potential limited impacts but it is  
not clear whether they are ecologically significant;  
and".

(Mr Slyfield reads paragraphs 125(c)-139 of opening  
submissions)

That might be an appropriate moment for me to mention that this word "plume" is a word that I encourage you not to think of as a cloud that might, in any sense, be visible to the naked eye. Mr Andrews tells me that at anything below 15mg/L, it would not be visible at all. So, we're talking about extremely low levels, in terms of what might be in the mind of a lay person when that word "plume" is used.

(Mr Slyfield reads from paragraph 140 to end second sentence of paragraph 153 of opening submissions)

**CHAIR:** That will be traversed in evidence placed before us today? You're advocating this, so we will see that in evidence?

**MR SLYFIELD:** Yes, the evidence on which I am relying is evidence that has been filed already.

**CHAIR:** I understand that and is that point going to be reinforced today? It is a matter of which I have a number of questions, you see.

**MR SLYFIELD:** I am happy to take your questions on it.

**CHAIR:** No, you're advocating. I will be questioning the witness.

**MR SLYFIELD:** Yes. You will be hearing evidence on this matter.

**CHAIR:** Thank you.

(Mr Slyfield reads from third sentence of paragraph 153 to end paragraph 170 of opening submissions)

I should add, this matter is being raised as a matter of section 60 - I will check the number. It is under 59(2B) not under 59(2). And there is a difference between the way 59(2B) raises human health affects compared to how it's raised under 59(2).

(Mr Slyfield reads from paragraphs 171 to end second sentence of paragraph 176 of opening submissions)

It comes in under the other element that I have listed at 172, it is an alternative method of disposal, not a reuse, recycling or retreatment.

5 (Mr Slyfield reads from third sentence of paragraph 176 to end paragraph 182 of opening submissions)

You will be pleased to hear I am at the last section which is on conditions.

10 (Mr Slyfield reads paragraphs 183-189 of opening submissions)

I won't read the quote out to you. I note also subsection (3) goes on to talk about staging and I won't read that out to you either.

15 (Mr Slyfield reads paragraphs 191-206 of opening submissions)

I've deliberately avoided making any kind of rounded out statement at the end of that submission because I imagine you've heard plenty from me but I'm very happy to answer any questions you may have on any aspect of that.

20 **CHAIR:** What I'll do, Mr Slyfield, as you have provided advocacy on behalf of your clients, I am going to ask if there are any points of clarification at this time because what you've usefully done for us is highlighted some matters we want to traverse and  
25 that's very good. Starting on my right, any points of clarification?

**MS WRATT:** No.

**MR MORRISON:** No.

30 **CHAIR:** I might have a few. Can we have an electronic casebook of the matters, the Court decisions that you have drawn our attention to?

**MR SLYFIELD:** You certainly can.

**CHAIR:** It doesn't need to be in hard copy. Electronic would be good.

**MR SLYFIELD:** I will make that available.

**CHAIR:** I just want to turn to the words "uncertainty" and "adequate", I think you are saying that the common meaning to examine those terms is to be applied?

5

**MR SLYFIELD:** I am only hesitant, in the sense that King Salmon was not under the -

**CHAIR:** I understand that.

**MR SLYFIELD:** Certainly, my submission to you is that a common meaning should be applied of those terms.

10

**CHAIR:** Can I just traverse that area that you talked to us about, the effect has to take the whole effect, and how that equates to the consideration of the existing environment?

**MR SLYFIELD:** Well, the submission I was advancing in relation to the whole effect was focusing on what the relevance is of 50,000 cubic metres that CRL already holds consent to dump, and really just trying to make sure that you aren't attracted to looking at that and saying that's already permitted, so we're only needing to look at the extra 200,000.

20

You may need to clarify for me what the existing environment is if you're interested in me talking some more about that.

25

**CHAIR:** No, I think you've answered the question. That has helped me to gain an understanding of where you are at there.

I have a question at 83. I will leave that, that's fine. Okay, thank you for that. And you would like to move on?

30

**MR SLYFIELD:** I think I would. The first witness is Mr Male, Simon Male. You should have before you already a statement of evidence that he has

prepared. It is not a long statement of evidence but he has, in addition to that statement of evidence, been a contributor in a number of other ways. Most significantly of those, he has been a contributor to further information responses that you have received.

You will see when you have a chance to look at the Market Economics report, that it repeatedly refers to information provided by CRL and so, I will be asking Mr Male to confirm how that has happened and whether he is the person from CRL who has provided that information, so that if you have any questions arising out of the market economics report on how that might have occurred, you might be able to seek out the information you need from him.

**CHAIR:** I think we would be very interested in his view on that report because, having read it, it's proved to be very useful to the Committee.

**MR SLYFIELD:** Perhaps that is a useful place for Mr Male to start, with some comment on that topic, and then we can go back to his statement of evidence and get him to highlight any other matters that are still key matters or live matters.

**MR MORRISON:** You are talking about Mr Male's statement of evidence dated 25 October?

**MR SLYFIELD:** That's correct, thank you.



**SIMON MALE**  
**QUESTIONED BY MR SLYFIELD**

5

**MR MALE:** Just to clarify the information referred to in the Market Economics report supplied by CRL, that is predominantly supplied by myself. Some of the information I gathered from Dredging New Zealand who is one of the submitters who will be heard later on but I don't want to leave the whole regulatory system of the hearing, Dredging New Zealand is here today so if there's any specific information I can refer to them to answer that today.

**CHAIR:** That's fine.

**A.** I mean, as you well know, my evidence was submitted on 25th of October, so I will take that as read.

I won't summarise every specific fact because the advantage of being an applicant is there's a lot of experts here to do that and I am not.

I will spend a few minutes on the background of the company. We are a family company. I have been the Managing Director for approximately 20 years. We are heavily involved in civil and construction. We have done local international airport works, mining contracts, we've done commercial and residential subdivisions, we have got extracted industries in relation to aggregate in Auckland and Waikato, and specifically to this permit, we've been involved in a fair bit of marine work as well. So, we've completed Gulf Harbour Marina, Pine Harbour Marina, Whitianga Marina, Mechanics Bay, we've renourished Mission Bay beach twice, Kohimarama, about

four or five other pocket beaches. We've done reclamation on Onehunga, we've done 4 hectares of reclamation on Auckland Airport. So, we are more from an operations point of view.

5 From the dredging side, we've only operated in Pine Harbour Marina until 2015, we developed that. And part of that, sort of, process was managing the dredging, (a) the dredging operations and (b) disposal of the dredgings.

10 We have been through intimately the whole process of disposing CMA and going through the whole DOAG procedure, the disposals dumping ground and then conversely into the NDA work of Maritime New Zealand and then conversely through EPA.

15 So, my role here is probably to try and keep things as practical as possible because there are a lot of things decide and, as we all know, a lot of things will be decided inside of the hearing and next week we have to go and do it and we've got to try and make it workable.

20 So, if the Committee is of a mind to grant consent or grant a permit, my main role is to try and make the thing practical.

25 **SIMON MALE QUESTIONED BY COMMITTEE MEMBERS**

**MR MORRISON:** Thank you, Mr Chairman. Mr Male, in the consideration of taking sediments oil from the Eastern Coromandel, i.e. Whitianga and I presume Tairua will come into that with the new marina there?

**A.** Yes.

**MR MORRISON:** Have you considered land disposal of that

as against putting it out in the EEZ disposal area.

A. From an operational point of view, it is a bit of a catch  
22 because a lot of these processes are considered at a  
consent stage when they apply for their dredging consent,  
5 so they have to go through different alternatives.

Where we have been since about 2015, is essentially  
the receiver or the permit holder. So, we don't actually  
get involved in the different options.

So, I assume you're working through the market  
10 economics report?

**MR MORRISON:** Yes.

**MR MALE:** We are very Auckland focused because that is  
the limit of my knowledge and we work through  
Redvale from the north and Hampton down to the  
15 south.

As far as alternative options to land, no, we  
haven't considered those for Whitianga, Tairua and maybe  
even the waterways.

**MR MORRISON:** Okay, thank you.

20 A. To give you an example, right now, I think today but  
definitely yesterday, Whitianga Marina is currently being  
disposed in the Northern Disposal Area. I would assume  
if there was a more economic process, they would have  
taken that.

25 **MS WRATT:** Thank you, Mr Male. I have a couple of  
specific, I guess, detail questions. One of the  
questions that we've asked a couple of times, I  
think, is around the sea state and the number of  
days that aren't suitable for dumping. You've come  
30 back and said 50 days. Just for clarification for  
me, is that 50 days on which you would have dumped  
or is it 50 days out of 365 days?

A. That is a good point. It's 50 days that we've not sailed  
50 days, 50 days that we would have dumped. It's not 50

days of the year, it's predominantly more.

**MS WRATT:** So, the actual days of the year could be more?

A. Correct, yes.

5 **MS WRATT:** Any comment on that?

A. This is where I'm going to look over my shoulder and look at Dredging New Zealand and see what they say.

**MR THOMPSON:** Mark Thompson from Dredging New Zealand.

10 Generally, we have a two week shutdown at Christmas and we don't work public holidays due to most of our consents for Council. Generally, the guys work five days a week during the week but if the weather doesn't allow during the week, we work the weekends to keep us on track.

15 We have looked through all our records and it wouldn't be 365 but it's probably 350 days of the year that we actually are working. We would only have 50 that we wouldn't due to weather conditions at the cite. Does that make sense?

20 A. That might be 55 overall, it's only 15 days that you're not working.

**MS WRATT:** Yes, I think I get you. There could be some of those, like if it's over the weekend when you wouldn't otherwise be working?

25 **MR THOMPSON:** There could be weather events that wouldn't affect us, correct, yes.

**MS WRATT:** So, 52?

**MR THOMPSON:** Yep, around that number, yeah, days of the year. The weather generally doesn't affect us too  
30 bad. We have a lot of southwesterlies and that calms the site off really well for us, gives a lot of protection from the land. It's northeast when they come in and that's usually only a short period and mainly around the summer period where we have a

lot of summer holidays, so it helps our numbers a little bit.

**MS WRATT:** To explain why I asked that question, my concern is that with five times the volume being  
5 dumped, does that put pressure on you to actually be operating in conditions that are less desirable, therefore increase the risks associated with your operation?

A. Yeah, obviously we've had this conversation with Council  
10 and we have had this conversation with Maritime New Zealand and EPA. Maritime New Zealand is probably the only enforceable regime there was but we've always gone down to Master's discretion. From our point of view, from a regulatory authority, as soon as we take  
15 that away from masters discretion it is the safety at sea and ultimately the skipper's call.

In the last question I gave the examples which I did get from Mark about 35 knots and 2 metre swells for different vessels in the fleet. We always go on the  
20 Master's discretion. every vessel is different but we always leave it on the Master's discretion.

**MS WRATT:** You do give some numbers that I can't recollect off the top of my head of the sort of number of days that you would have to be at two, I  
25 think it was two expecting to be dumping twice a day, a maximum of twice a day, how many days you would have to operate for the amount of -

A. Yeah, it is market dependent, which is that catch 22 that we are in as far as the demand goes, but we are saying  
30 essentially if there's 0.4 of a knot difference, I think it's about 3 hours difference at the other end. We try and get the vessels to leave at high tide. If one is loaded by 9.00 or 10.00, high tide is 1.00 p.m., they have to leave at high tide.

And just extrapolating that a little bit further, the reason that we use or Dredging New Zealand uses the particular barge sizes, is they can load in the marina basin. Anything bigger has to be loaded outside the marina basin. If they do load in the marina basin, they draw the maximum depth and the only way you can actually leave is when the tide is in. That generally curtails when they end up at the site.

5  
10 **CHAIR:** A supplementary question on that because of barge size. The Market Economics Report talks about barge transportation being a significant cost to the dredging and perhaps the need for bigger vessels; is that going to happen?

A. That is our situation. So far, the biggest vessel we have is approximately 700 cubic metres and that can still fit inside the marina basin. To give you specific examples, Earings are bringing in two 1200 cubic metre vessels and they are specifically bringing those in for AC36 for America's Cup. They will not sit inside a marina basin but I do know that once AC36 is done, those barges will probably leave because unless there's any capital works proposed to do, they simply wouldn't fit inside a marina basin.

20  
25 **CHAIR:** I would be really interested on behalf of the Committee because, you know, the conditions are currently, I think there's an agreed report on the conditions almost due or due now and I would be interested in your, from an operational viewpoint, your view on those conditions?

30 A. I was going to say best practical outcome. It is still a work in progress. There's a few issues that have come up in conferencing last night with the planner, funnily enough, for Dredging New Zealand about practical things. I think it's workable with the proposed changes that are

coming through from the expert conferencing last night.

**CHAIR:** Strictly not a matter of our consideration but biosecurity is one. In transshipping potential dredge material, what are the measures that you  
5 take to stop nasties spreading?

**A.** So, are you talking about nasties inside the vessel or outside?

**CHAIR:** That's coming from the dredge side into the vessel and then transhipped.

10 **A.** Well, so, again, under Maritime New Zealand we work on load lines and there's different load lines for different areas. Where we are, is essentially in the EEZ, so we have to run a fair bit of freeboard or the vessel sits very high. So, the spillage is negligible. If you take  
15 the old dump truck method, what we have measured on site is near enough what we dredged at one end, so it all seems to add up but, I think you can get some sort of visions of slops coming over the side and other bits and pieces, that simply doesn't happen.

20 We have got a video that was supplied of the T R Healy disposing and that shows freeboard where it is and also Dredging New Zealand submitted a video which is essentially their operation video of a barge being loaded and heading out to site and that gives you an idea of  
25 what the freeboard was.

**CHAIR:** Those videos were very useful, so thank you for those, they were particularly useful.

**MR SLYFIELD:** Is there any benefit to the Committee in those videos being shown so Mr Male can provide any  
30 commentary on what's visible?

**CHAIR:** I think, Mr Slyfield, that's an excellent idea.

**MR SLYFIELD:** I think he is inclined to leave dredging New Zealand's video for them to show when Mark is giving his evidence but he can perhaps talk us

through the others.

**CHAIR:** Are we able to get that, please?

**MR THOMPSON:** Just on that question, currently I'm running two barges. I have a third and I also have  
5 access to CRL's barge, so I actually have twice the capacity of barging available, and I'm only working with guys during the week. If they have a second crew to cover weekends, the adverse weather, we wouldn't be going out in that. I am a qualified  
10 Master myself and we make those calls pretty seriously. It's about safety for us before moving mud.

**MS WRATT:** The key question for me really, is do you have any concerns with the increased volume that  
15 you may well be handling of that being impacted by adverse weather conditions?

**MR THOMPSON:** No.

**MR MALE:** No, I have no concerns.

**MS WRATT:** Thank you. Can I ask one other question  
20 while you're preparing for that? I am not sure whether you want to address this now or not, Mr Male.

In terms of the condition or the suggestion of an industry liaison group which I think you did  
25 mention, there's points in someone's submissions about iwi liaison, ongoing iwi liaison. Have you got any thoughts in terms of how you would see a stakeholder liaison group or groups? Do you want just a fishing liaison group or would you propose  
30 to have an expanded group that was a range of stakeholders?

A. In our quarantine industries, we run a CLC, Community Liaison Group, it's very similar, we address things and other bits and pieces. So, we looked at adopting the



same model. Sam Fitz wasn't a fan of including iwi, they wanted to have their own one. We are still talking to Ngati Rehua which is, excuse me, the closest marae which is the way I look at it, the probably most affected in my mind. Those conversations are still going on. Due to the hearing, they won't happen today but they will happen over the weekend but that was our plan to have a iwi liaison group and industry liaison group.

**MR MORRISON:** So, that's two groups, not one.

10 A. Not one. As I said, I will please hold that until I finish the conversation with them.

**CHAIR:** Okay. Are we right? Let's have a look at the video people.

A. That is T R Healy, it disposes really quite quickly. Probably the load is disposed now. If you look at the side, I don't know if you can pause it, keep it going, but you can see the black mark there is the borderline and the load line is probably the second step up that you can see which I can't see the load line on the video. The second rung up you can see is the load line. That loads up to 1,000 tonnes or 700 cubic metres.

The other interesting thing is when the vessel actually splits, the whole load is deposited in probably about 15-20 seconds.

25 Sorry, just pause that if you can. That's the fully loaded Healy as it is now. And the interesting fun fact is T R Healy was Professor Healy from the University of Waikato that started this whole process.

**MR MORRISON:** I recognised the initial in the name.

30 **CHAIR:** The name is very familiar to us.

A. So, yeah.

**MS WRATT:** That is the same barge in both videos?

A. Yes. That's fully loaded up to the load lines there. And then go to the disposal process, the easiest way,

rather than seeing the material coming out, I am not trying to hide the plume, you can't see the plume as such, but you see the vessel pops up as it disposes.

**CHAIR:** DOC, do you have any questions about this?

5 **MS ARTHUR:** Of the operation of the barge, no.

**CHAIR:** We will come back to you.

**MS ARTHUR:** That's all right.

**CHAIR:** Is that finished now? Okay, finish it.

A. This is a very calm day out on site. It is not usually  
10 this benign.

**MR MORRISON:** I did note that.

A. The other interesting thing is, the skippers, I know they're under the pump for about for 12 hours until they get out there and they are quite proud of the fact they  
15 can get it over the side because if you look in this case, he's probably about 200 metres in front and that's fully disposed now.

**MS ARTHUR:** I am just looking at, assuming that that rope off the back was attached to the tug but then  
20 I see the tug is in the front. The rope off the back, what is that?

A. There's a couple of reasons for the rope off the back, (a) it gives them something to hold onto when they dock. Also, when the vessel, in this case it is an alloy barge  
25 and when the vessel is empty it has a high bit of freeboard and you don't want the barge wandering on the way back, so it generally slows it down from behind and gives a little bit of drag to keep the thing tracking.

**MR RIDDELL:** What has it got on the end?

30 A. We had some flaps at the back, we ended up putting flaps at the back, I think they are called gurney flaps on the end to slow the material down.

**MS ARTHUR:** So, you have a staff member there?

A. No, it runs fully remote. The sound cam one which you'll

see from Dredging New Zealand, that's on this vessel, it runs by itself. Everything runs remote and also, there's an AIS, which is an automatic identified system, on the barge and there's also one on the tug as well.

5 **MR THOMPSON:** I can explain a bit more about the rope out the back. That is also the emergency tow, so if the main tow line breaks, the tug can come round and pick up that line and then it feeds out another large line. It is a safety requirement of Maritime  
10 New Zealand to have that on board.

And we don't have anyone on the barges at sea, they are all remote controlled, apart from the manned self-driven ones. We've got one that's very, very similar to the Healy that we use every day, almost every  
15 day.

**CHAIR:** Okay, thank you. The next one?

**A.** I think the next one is Dredging New Zealand. If you want -

**CHAIR:** We will leave that one, that's fine. Department  
20 of Conservation, do you have any questions for the witness please?

**MS ARTHUR:** Well, just one.

25 **SIMON MALE - QUESTIONED BY MS ARTHUR**

Q. So, my understanding of this, you will have the consent and you're going to manage anyone that's coming in  
30 unconnected to your consent, so third parties that you are talking about?

A. Correct.

Q. Does that give you a monopoly position if you have this consent? There's nowhere else, according to your

information, no-one else can dispose of any dredging, so if someone turns up that you don't like the look of, regardless of the fact they will meet all the requirements, are you going to be able to control the dredging in that respect?

5

A. Are you talking about control of dredging from an environmental point of view? If somebody, I'm trying to look for a better word, looks dodgy?

10

Q. So, they just have red hair and you don't like the look of them.

A. I might ask Morgan to comment on the Sales of Goods Act to see whether we can serve people or not.

15

So, it's a valid point that essentially we might have a monopoly and put the price up or do whatever the case may be. It's like any other, and I'm sorry, Town Planning Act, RMA, it's like any other Resource Consent, that we don't have exclusive use of that seabed or any other seabed.

20

If we are of a mind to triple our price, then I'm sure the market would see an opportunity and let somebody apply for their own consent to go somewhere else.

**MS ARTHUR:** Thank you.

25

**SIMON MALE - FURTHER QUESTIONED BY COMMITTEE MEMBERS**

30

**MR MORRISON:** I guess, Mr Chairman, from that, what you're saying, Mr Male, is there may be other users that can go through a consent process to use the site?

A. Yeah, or any other site in EEZ. So, you know, we don't have an exclusive option on the sites.

So, you know, most of our, as you well know for this

process and through the way the regulatory system works, the monitoring and everything is open book. We're not in a situation where we can suddenly put the price up and get away with it, so to speak, so no. But I just comment  
5 on, you know, the practicality, especially the Market Economics Report. If I do put the operations, my operations hat on, we currently have a permit for 50,000 cubic metres a year which we know and are operating. Last year we fell slightly short of that. The issue that  
10 we found under the EPA was our inability to change the scope of the permit or volume of the permit and this is one of the reasons we're sitting here today, rather than just simply applying for a variation. We can do that through Maritime New Zealand. We did that with Sanfords,  
15 we took some volume from next year and put it this year. We are sitting here from an operations point of view, saying we have Dredging New Zealand who have at least 25,000 cubic metres of our 50,000 next year but probably more. We have Half Moon Bay hoping for their consent to  
20 come out, and we are hoping it doesn't come out quickly if anyone of us are Commissioners here, and they've got 34,000 cubic metres they want to put next year and we have AC36 who have been ringing me, I don't know about today but definitely yesterday, saying they've got 70,000  
25 cubic metres and they want it to go in there.

If I look at it operationally, this is the sort of situation we've got.

**CHAIR:** Any other questions from DOC please?

**MS ARTHUR:** No.

30 **CHAIR:** Mr Male, thank you very much. I don't think there's any other questions.

**MS WRATT:** Perhaps one more from me. I am looking back through the notes I made while Mr Slyfield was talking. You did comment that Mr Male will expand

on the Ports of Auckland reclamations. What were you -

**MR SLYFIELD:** I think that was Mr Hay. I may not have been clear, I meant Mr Hay. I am happy if Mr Male  
5 wants to talk about that as well.

A. Again, I can talk from our side. It was included in the Market Economics Report. We've been dealing closely with Ports of Auckland. They could foresee their need for maintenance dredgers specifically coming to a head. They  
10 haven't run reclamations, and we know that reclamations are probably a thing of the past in the port and they can see their time running out. We have agreed with Ports of Auckland that we will allocate their volume in our permit if their permit is unsuccessful.

15 They are looking at applying for their own permit, it is just what we discussed before. If it is unsuccessful, then we can cover it in ours and that's one thing they were quite conscious of the fact that they actually had an alternative option for specifically  
20 maintenance dredging which is critical to the running and operation of the port.

**CHAIR:** It is quite nice to cover your bases like that.

A. Yes.

**CHAIR:** Okay. Any other questions? Mr Male, thank you  
25 very much. We may come back to you once we have reviewed consent conditions.

**MR MALE:** I understand.

**CHAIR:** You understand, thank you. Mr Slyfield, the next person?

30 **MR SLYFIELD:** The next witness is Mr Connors Andrews.

**CONNON ANDREWS**  
**QUESTIONED BY MR SLYFIELD**

5

**MR ANDREWS:** I have tried to be a bit different and I have prepared a PowerPoint to try and convey pictures rather than lots of words.

10 **MR SLYFIELD:**

**Q.** Just before you do that, Mr Andrews, for the sake of good form, can we just confirm all of the things you have contributed to, there are a number of them. first of all, the fact that you authored a report that's included in the application document?

15

**A.** Shall we go to the next slide?

**Q.** You've beaten me to it.

**A.** There we go. I trust you can see that screen okay and I will be referring to some of the images on there.

20

So, for clarity, my statement of evidence, I prepared the evidence which is dated the 25th of October 2018. As part of that evidence, there's also a Beca Dredged Material Disposal Study that's included in Appendix A of that evidence. And there is also a Technical Review of the Original Northern Disposal Area Oceanography Assessment that was done at the commencement of this whole project.

25

I am also the author of the supplementary evidence that was prepared yesterday, so I don't know if you've had a chance to have a look at this.

30

**CHAIR:** You are going to have to read that to us, I'm sorry.

**A.** Okay, I am happy to read that to you.

**CHAIR:** If you wouldn't mind.

A. Sure. I'll start with that first and then I'll continue on with the presentation which is just a real key summary which summarises all the points of this evidence to date. So, it's quite voluminous.

5 **CHAIR:** That's fine. Why don't you read your evidence to us, please, your supplementary evidence.

A. Sure. This supplementary evidence will make sense if you've read the original piece of evidence but I will start. I will skip 1.1 which explains who I am.

10 (Witness reads paragraph 1.2 of supplementary evidence)

That consists of a whole series of images and describes what we call the sediment plume footprint and concentrations. This is also consistent with the request for further information that you put in the DMC Minute 7.

15 (Witness reads paragraph 1.3 of supplementary evidence)

That is referred to as scenario 1 and that's consistent through all the evidence to date and two 1200 cubic metres dumps events separated by an hour and that's referred to as scenario 2.

(Witness reads paragraphs 2.1-2.2 of supplementary evidence)

25 Would you like me to read that to you or do you want me to simply refer that to you?

**CHAIR:** Handle it in any way that you think we're going to get the most information, please.

A. I am going to touch on it now.

30 (Witness reads paragraph 2.3 of supplementary evidence)

It is noted that there is limited information available on total suspended solids but, in terms of what's been collected to date, the 1-4mg/L is the range that we have documented.



**MS WRATT:** Just a quick question on that. 1-4  
milligrams, that's what's been measured at the  
current disposal rates?

5 A. No, that's baseline. So, not considering the - it is a  
typical ambient environment.

**CHAIR:** That is the baseline?

A. The baseline, correct, or referred to as background.

**MR MORRISON:** We have heard that that's not discernible  
in the water as such?

10 A. Correct, correct. Very low values.

(Witness reads paragraph 2.4 of supplementary  
evidence)

15 That is consistent with the size of the bottles that  
you use when you're sampling water in these marine  
environments.

(Witness reads paragraph 2.5 of supplementary  
evidence)

This was in direct response to the requests of the  
DMC Minute.

20 (Witness reads paragraph 3.1 of supplementary  
evidence)

25 It might be useful if I flick onto a slide and I  
will explain what that actually means. Can you go  
forward a couple of slides. Definitions, so you  
understand what I'm talking about.

30 To the left-hand side is a time series of  
information and in this case it's turbidity and in fact  
it's actually from the dredging of Tauranga Harbour.  
That shows turbidity. What happens when, what you can do  
is you take that dataset over a period of time, reorder  
it from highest to lowest, and then you run a frequency  
assessment on it. And you end up with a figure which is  
on the right which is called an exceedence curve.

So, add an exceedence probability of 50% which means

that at 50% of the time the value will be at that point.

At an exceedence level of 95%, that means 5% of the values will be above that point and similarly for 99% it will be 1%.

5           So, when I refer to exceedence, this is what I'm referring to. So, the P99% is a very high concentration and if I said P10%, it is a very low concentration.

The P50% is roughly equivalent to the mean or the average, typical average.

10           The maximum concentration is the P99%, 95% and 90% exceedence plots for both scenarios 1 and 2 are presented in this Appendix A.

(Witness reads paragraph 3.2 of supplementary evidence)

15           Those are a range from 500 metres down to 40 metres, with a vertical cell resolution of 20 metres. That means where the models have been simulated in 20 metre layers throughout the water column.

20           Figures A1 to A2 present the maximum simulated concentration at every grid cell within the model domain for scenarios 1 and 2 respectively. The maximum expected concentration within a 500 metre radius of the NDA centre is less than 2.5mg/L and 5mg/L respectively. That is scenarios 1 and 2. The maximum expected concentration at  
25           the NDA boundary is predicted to be less than 1.5 and 3mg/L respectively. Consistent with a near field modelling, the results show that suspended sediment can travel as far as approximately 15 kilometres, although the concentrations are negligible.

30           Figures A3 and A4 present the P99%, or the highest 1% of the values, simulated concentration at every grid cell within the model domain for scenarios 1 and 2 respectively. The maximum expected P99% concentration at the NDA boundary is predicted to be less than 0.5mg/L and

1 million respectively.

Figures A5 and A6 present the P95%, i.e. the highest 5% of the values, simulated concentration at every grid cell within the model domain for scenarios 1 and 2 respectively. The maximum expected 95% concentration at the NDA boundary is predicted to be less than 0.15 and 0.3mg/L respectively.

I will skip through 3.6 because it says the same thing as I've said before.

In terms of instantaneous concentration. This has come about from a further request or agreed within the joint witness conferencing of understanding what the concentrations could be over time from initial release.

Instantaneous suspended concentrations for scenarios 1 and 2 are appended in Appendix B and C.

Instantaneous concentrations are provided at 1 hour post the initial disposal, that coincides with the time of the second disposal, 2 hours post initial disposal, which is one hour after the second disposal, and 4 hours post initial disposal, which is 3 hours after the second disposal.

To give you some logic to those timings, is that from all analysis to date it usually takes three hours, in the order of on average of 3 hours for the plume to reach the NDA boundary.

The concentrations are spatially averaged for each month to provide an average plume footprint in concentrations.

The following conclusions can be made.

For scenario 1 far field effects include consistent with the nearfield modelling the plume tends to reach the NDA boundary within 3 hours of disposal.

Peak concentrations are predicted to be less than 0.5mg/L within a 500 metre radius of the NDA centre.

Generally, the plumes are confined within the NDA with trace concentrations of less than 0.02mg/L, 2 kilometres from the NDA centre. It is noted that during July and August there is a greater dispersion to the southeast resulting in cumulative concentrations of less than 0.3 million at the NDA boundary.

For scenario 2, far field effects include, similar to scenario 1, that the plume tends to reach the NDA boundary within 3 hours.

The peak concentrations are predicted to be less than 1mg/L within a 500 metre radius of the NDA centre.

And generally, the plumes are confined within the NDA with trade concentrations of less than 0.3mg/L, 2 kilometres from the NDA centre.

It is noted that during July and August there is also a greater dispersion to the southeast resulting in cumulative concentrations of less than 0.5mg/L at the NDA boundary.

So, in conclusion, peak concentrations will be of short duration when compared to mean concentrations. Average concentrations presented in the evidence dated 25 October 2018 are reflective of net cumulative effects.

Maximum far field concentrations resulting from the dumping process are predicted to be less than 3mg/L at the NDA boundary.

The peak concentrations presented in Table 3.11 of appendix A of the evidence dated 5 October 2018 which presents sediment concentrations at the NDA boundary are considered conservative.

The P99%, P95% and P90% far field concentrations resulting from the dumping process are predicted to be less than 1, 0.3 and 0.15mg/L at the NDA boundary respectively.

Overall, instantaneous concentrations at the NDA

boundary are consistent with the average concentrations presented in the evidence dated 25 October 2018.

That evidence will make a lot of sense when you look at the figures, so I encourage you to look at that.

5 **CHAIR:** Thank you for that. Department of Conservation, do you have any questions of this witness?

**MS ARTHUR:** This evidence that you've just presented, have you sent that to Dr Longdill?

A. I have, both Dr Longdill and Mr Peterson, I sent that  
10 yesterday when it was completed.

**MS ARTHUR:** Right.

A. I must admit, I was assuming this was going to be as read and the content of it was a much more simplified version is what I've put in this presentation.

15 **MS ARTHUR:** It might be useful to have the presentation. We have a slight problem in that Dr Longdill, we haven't had the conversation about whether he's happy with this or not. We're going to have to -

**CHAIR:** You will have to come back to us?

20 **MS ARTHUR:** Yes. It might be useful to see the presentation.

A. I think it would be useful to go through this. This is a much more simplified version.

**CHAIR:** Please do, if you wouldn't mind, because this is  
25 an important area and I want to traverse it in some detail, please.

A. Sure.

**CHAIR:** You are going to have to forgive us if our questions seem naive at times.

30 A. Of course.

**CHAIR:** We are trying to get our head around this whole plume.

A. I understand.

**MR MORRISON:** Mr Chairman, can I just ask a question in

regards to just what the Chairman has said about our naivety for the purposes of hearing this in an open forum, okay, so I'll probably read it, that's what I'm saying.

5           Just remind me, the eastern edge of the Hauraki Gulf Maritime Park, how far is the edge of that park in regards to the plume moving from the east to the west? Is there much difference because, if I recall, the Hauraki Gulf Maritime Park is edged into the area by a  
10 short distance. So, the question is, if it's a 2K plume and it's moving from the east to the west, will it meet the eastern edge of the Hauraki Gulf Maritime Park?

A. To be honest, I actually don't know the answer to that question. Most of the distances to the Hauraki Gulf  
15 Maritime Park has been addressed by Mr David Hay but what I can tell you, is that the definition of plume is quite subjective, as Mr Slyfield mentioned, and in terms of concentration but the general alignment of, let's call it the plume, is generally from the northwest to a southwest  
20 direction. And that's in line with the typical tide currents that happen at that time, and it is generally aligned at that.

In terms of - there will be, what's shown in the modelling to date, is that there are very, very low  
25 concentrations that do propagate outside the NDA and some of those can be as far as 15 kilometres but the concentrations are incredibly low and it's more of a numerical artefact rather than a physical artefact.

**MR MORRISON:** Okay. I understand the tidal movements, I  
30 am just wanting someone in the room at some point to just identify to us, and to this public hearing, does it impede on the boundary of the Hauraki Gulf Maritime Park?

A. Sure, I can come back to you on that one.

**MR MORRISON:** Thank you.

**CHAIR:** Okay, we will take your presentation now,  
please.

A. Sure. Can you go back to the first slide?

5           So, just reiterating the scope of my evidence. It  
was the series of reports and evidence that I have  
outlined, the supplementary evidence I've just read and  
my evidence is limited to the quantification of the  
disposal process and also the physical extent of that  
10          dispersion process and the evidence is taken as read.

As I mentioned before, the intent of this  
presentation is to provide a summary and I will try to  
keep it as simple as possible.

15          Next slide please. Previous studies. There has  
been a substantial amount of work done out at this site  
which is not normally what you tend to have at your  
disposal when you are doing an assessment such as this.  
Usually, you are in the absence of physical data and you  
rely on numerical modelling.

20          So, with that substantial data set, it does mean  
that we don't have to wholly rely on the numerical  
predictions from numerical models and that's from the  
trial dumping that was outlined in the PhD thesis of  
Dr Flame, the previous assessment environmental effects  
25          that was completed for the current consent and also the  
current monitoring and past monitoring that's required  
under the existing consent conditions.

We have also relied on comparing the dumping process  
to other international dumping disposal grounds as well.

30          From the previous studies, there have been a few  
conclusions that have been made. From the work of  
monitoring the mound footprint to date, so over the  
existing consent period, the footprint of the mound  
itself, i.e. the mound of the dispersal sediment issue on

the seabed has been found to be within a 375 metre radius of the NDA centre.

The work done by Flaim in her PhD thesis found that passive dispersion was observed to extend within 800 metres of the release cite. The little asterisk there, I put it there, that was - there was a note saying that there is likely to be sediment beyond that but it couldn't be detected with the current instruments and the methodology that was adopted.

And the other large conclusion was that the NDAs are a non-dispersive cite or referred to as retentative, whereby any sediment once deposited on the seabed does stay put.

There's also been a lot of investigations through the MC Minutes requested about ADCP measuring that was done. The lower figure is actually an ADCP measuring snapshot throughout the water column with the red area showing the disposal plume which has been released from the top of the figure by a barge.

So, there is quite a bit of qualitative information out there, rather than quantitative, in terms of understanding the actual plume effects on release.

If we go to the next slide, please. We will skip this one. Go to the next one, please.

So, in terms of the oceanography environment, tidal currents at the sites are dominated by non-tidal currents. To give you a further explanation of that, tidal currents are either created by the astronomical forces, either by the effects of the sun and moon pulling on the water, or other effects such as pressure gradients, long-term wind patterns, density changes in the water which promote flow. And commonly in this part of New Zealand, it's affected by the east Auckland current.



So, with that, the flows at the site are dominated by northwest and southeast flows. There are quite distinct seasonal effects. During summer, there's prolonged northwest flows and during winter it tends to be prolonged to the southeast.

5

Some of these flows typically with a tide you would have tidal flows that either peak and ebb over a 12 hour, 6 hour, 12 hour cycle. In this situation, because of the dominant east Auckland current, some of the astronomical side velocities you see get drowned out. There can be quite prolonged periods where the currents are propagating in one direction rather than reversing.

10

The measurements, there's been a significant, the plots on the right are current rows which show where the currents are going to and with respect to frequency and also the colours refer to the magnitude of those currents.

15

What I can say is that this data set has been completed by numerical modelling over a 10 year high cast period by MetOcean Solutions which is a division of the Met Service.

20

These currents have been validated against measurements undertaken by Flaim, particularly seabed where the 50% exceedence velocity is around 6 centimetres per second and near the peak 99% exceedence velocity is around about 0.17 metres per second and that's consistent with Flaim's measurements as well.

25

Next slide please. The disposal process. I will quickly go through the disposal process because it is important to understand how it works but there's really three phases. The first phase is the consecutive descent where we saw in the video the sediment is just released from the barge and it quickly drops through the water column and in our case at the 145 metre water depth it

30

takes around about 60 seconds for the material from release to when it hits the seabed.

5 Now, when it hits the seabed it goes through a dynamic collapse phase where it starts to spread out like a mushroom on the seabed and that force driving it outwards latterly is a function of the velocity of the material that is pushed down through the water column and when it hits the seabed it spreads out.

10 And then finally, there's a passive dispersion where what's left in the water column once it's hit and settled on the bottom, there is a passive, there is a whole lot of suspended sediment that tends to be subject to wider dispersion and that's where the majority of the focus of the numerical modelling has been on.

15 In terms of numerical modelling, the first two phases, phase 1 and 2, are addressed in what we call near field modelling. That's addressed in the Beca report and specifically around about section 3 of that. And that quantifies the process, the time of it falling through the water column and, more importantly, the percentage of stripping. So, when stripping is the amount of material that's taken out of the disposed volume and then is available for passive defusion.

25 And then to assess wider effects across a region, we do that via far field modelling, and that's with particle tracking methods where we lose a whole lot of particles in the water column and see where they go.

30 That process is the standard way of how you assess these effects numerically. Why they aren't combined as one package is the far field model will always under predict the concentrations at the near field site.

Next slide, please. So, out of the near field modelling, I was going to go through some of the conclusions there but around about 5% of the dump volume

is subject to passive dispersion. So, that's what's left in the water column and can be subject to dispersion over a wider area.

5 The rate of deposition is quite rapid over the initial 2 hours and thereafter the rate of deposition is very, very low.

The majority of the material is deposited within 250 metres of the original - 250 radius of the original dump location.

10 And then from calculations to date, around 5-8% of the volume has the potential to be deposited outside of the NDA.

I just want to refer to the tables on the right and particularly the top table is for a 700 metre barge and the lower table is for a 1,200 cubic metre barge.

15 In the second column, it presents the proportion of sediment that's stripped that's available for wider dispersion.

What you will see there is that, for the 700 cubic metre barge, once the sediment falls through the water column at 145 metre water depth, about 5.2% of the material available has been stripped. For a larger barge, it's lower at 4.7. And that's just a function of the - there's a function of the actual volume that's deposited. And so, with larger barges, you tend to have a smaller stripping volume. And those numbers there have been applied for the far field modelling.

20 Once material is deposited, over the 35 year period we expect the mound to eventually evolve up to a height of about 5 metres, and that's assuming the proposed disposal strategy disposing at 13 locations within the 500 metre radius of the centre of the NDA.

30 Next slide please.

Now, in the far field modelling, in all the evidence

to date you will see a lot of figures which resemble something on the right. Now, just to give you an idea, the existing figure on the right is what we call mean concentration. This is an example of what the mean or average concentration will be during the month of August for scenario 2 which is the larger barge release. So, this is the worse case out of all the model runs that I'm showing you.

What that shows is the mean concentration at the NDA boundary tends to be less than 0.3mg/L over the 10 years. So, this is reflective of the overall cumulative impacts that you could expect on the site if you go out and dump two barges a day, 365 days of the year which is conservative.

Can you flick on - the next plot is the maximum concentration. This is, what is the concentration for every cell in the model that we've modelled and what is the maximum at any point in time? And what this is showing is that at the NDA boundary the maximum concentration is 3mg/L, as I have already alluded to in the evidence.

Just to give you an idea, to further paint the picture. The model results are presented in three levels. The top series, top row, for a 500 metre resolution and it goes out, you can see the tip of Great Barrier there on the left.

Next one down is at 100 metre resolution.

And the more detailed one is the 40 metre resolution, just at the NDA.

Next slide.

To give you an idea of the P99% scenario, this is again for the 1,200 cubic metre barge. Again, the peak concentration there at the NDA boundary are at 1mg/L but it gives you an idea of what those peak concentrations

spatially look like. I am referring to the bottom row and particularly where the concentrations are highest at the mid depth than at the bottom.

5 The that is the same results again for the 95 percentile.

Next slide.

10 This is the annual deposition depth. I think this is one of the most telling figures out of all the evidence. This is a representation of what the actual deposition depth on the seabed would be during the release of scenario 2. That's the larger barges, twice a day, 365 days a year.

This has also been scaled to a total volume of 250,000 cubic metres.

15 What this plot shows, I want to refer to the right-hand side, is that within 1,000 metre radius of the NDA centre, that the deposition depths outside that, i.e. essentially the white, are all less than 0.1 of a millilitre per year.

20 So, if you did some maths, basically it equates to 3.5 millilitres over 35 years at that 1,000 metre mark.

25 So, despite that in the previous figures you've seen plots of suspended sediment over a much wider area, how it relates to deposition on the seabed, these results are presenting that outside of 1,000 metres or the NDA boundary it's negligible, actually minor.

Just in conclusion, the majority of the material disposed is likely to be within 250 metres of the dumpsite.

30 And, again, up to 8% of the material has the potential to deposit outside of the NDA but, as I mentioned before, those deposition depths are likely to be negligible or certainly undetectable with less than 0.1 millilitres per year.

The average concentration at the NDA boundary, the elevation from the dredging operation is not expected to be more than 0.03mg/L, i.e. minor.

5 And the short-term concentrations are expected to be less than 3mg/L. And the mound height is expected to be up to 5 metres assuming the dredging methodology.

**CONNOR ANDREWS - QUESTIONED BY COMMITTEE MEMBERS**

10

**CHAIR:** Thank you. I have a series of questions.

The lack of calibration that was talked about has been resolved in the model?

15 A. Well, to calibrate, you need to dump. In terms of any dredging model, it's very uncommon to actually calibrate or validate. We happen to be in a very fortunate position where there has been some existing data that's been collected.

20 The model, the existing data to date has focused on measuring turbidity which is quite different from total suspended solids. So, I would say the model has not been calibrated but it's definitely been validated against the measurements. So, it's a qualitative validation in terms  
25 of what's been done, so the effects are similar to what's been observed but it has not been calibrated.

**CHAIR:** Should we be concerned about the statement that said "even with further calibration there will be uncertainty associated with modification...".

30 A. You are talking about ADCP. That is not the modelling. So, the ADCP, that paragraph is referring to the previous ADCP measurements that were conducted by Flaim during the trial. What happened there is, those instruments work on assessing back scatter and it was similar to the plot I

showed you, the coloured plot with the red.

5 So, during that processes, they measure the back scatter and relate that to turbidity which is a function, what they call NTU. Going from NTU to total suspended solids, you have to develop an algorithm to try and relate it, and there is a lot of uncertainty to that.

10 So, what I am saying in that response, is that even if you went through and tried to collect further data to try and understand what the relationship between turbidity and total suspended solids, there will still be a lot of uncertainty, even if you went out and did the ADCP measurements again. All you will come back with is a qualitative idea, you will be able to see the plume, you will be able to see where it's going, it just  
15 wouldn't inform you about what the concentration is at that point and at that time.

So, that's where the limitations of ADCP measurements.

**MS WRATT:** How do you measure actual suspended solids?

20 That comes back, I guess, for me, to a comment that was in the expert witness conferencing, which was there was some discussion about whether or not it was actually feasible to do any monitoring on suspended solids at the boundary.

25 A. Right. In typical dredging operations, and less so in disposal operations but I'll point to the Port of Tauranga, for example, and also Lyttleton which is existing.

30 What they do is, you tend to measure at receptor sites. So, areas that you are interested in and that might have an effect or might be affected by the dredging operation. This is going down a very adaptive management route.

The monitoring programs are always designed around

setting thresholds at these receptor sites and you constantly monitor and if they hit a set level, there's usually three stages, like stage 1, stage 2, stage 3 and each one has different responses. When you hit those levels, it means the dredging operation has to halt or change to mitigate that effect.

Now, those measurements always tend to be done as turbidity, so that's the NTU. So, not mg/L or the TSS, it's always done on turbidity because it's easy to do and it's the cheaper way to do it.

But what they do is, they tend to collect data and then they average it over 6 hours and then use that as the limits.

So, that whole process is very adaptive and it's designed for that case. So, if there is a set level and commonly I think in Tauranga it was 35 NTUs was the level, if it hit it that level it would change.

**MS WRATT:** That is an ADCP?

A. No, nothing to do with ADCPs, it's quite simply a light beam with a mirror and it detects the amount of solids, which is the percentage of light blocked, and it comes up with a value and says that's the concentration, that's the turbidity at that point.

**MS WRATT:** Would the level of total suspended solids that you come up with in your model at the boundary of the NDA, would they be detectable by that methodology?

A. Yes, the turbidity is - yes, it can go down to quite low levels.

**MS WRATT:** Putting aside whether or not it's adaptive management, could you have a condition which was around an NTU level at the boundaries?

A. Theoretically you could but I would ask the question, you have to be careful that the dump, the disposal process,



usually that kind of management process is adopted within a harbour where things are confined or you have sites of interest.

5 In the open water environment, it's much different because when you dump on a particular day, you don't know where, necessarily where the plume is going to go. And if you have an established monitoring point, the plume could miss it by 20 metres and you wouldn't even detect it.

10 So, in an open water environment, I've thought about this one a lot and it doesn't actually make sense, in terms of having those kinds of monitoring in place because, first of all, it's practically virtually impossible being able to capture the full NDA boundary, and also it's more appropriate to rather than looking at 15 the cause, look at the effect. The logic in the joint evidence statement, was that instead of looking at concentration, look at what can be effected. And that's through the biology and the flora and fauna and seeing 20 the change in that. That's a much more appropriate way of assessing the effect.

Just in the open flora environment, just the location, how you physically do it, it's not practical.

**MS WRATT:** So, you and the EPA expert witness, or is 25 that you, the DOC expert wasn't totally convinced; am I reading that correctly in terms of your conferencing?

A. No, where we differ slightly, is that DOC were wanting to understand the work, the work that Flaim had done in her 30 PhD thesis with monitoring an individual event. They were wanting to look at that a bit further, in terms of basically repeating that exercise again for an individual event.

I guess my position on that is, well, that's fine

but that will just be an individual event and what is the implication or how is that adding to us monitoring effects is somewhat limited, in my opinion.

**MS WRATT:** Okay, thanks.

5 **CHAIR:** Can I go back then, I want to work through some of these. In your mind, do we have a good understanding of the worse case scenario that could eventuate now?

A. Yes. So, all through the modelling it's been - we erred  
10 on the side of conservatism all the way. So, we've assumed that we're dumping silts and clays which is the finest material. We have assumed conservative sediment fall velocity, that means you have the greatest dispersion, i.e. the sediment can move the furthest. And  
15 we've also assumed larger barge sizes, dump sizes, so the 700 and the 1200 cubic metre barge. So, in terms of those volumes, we've considered that effect.

So, overall, the effects and the actual models themselves, particularly in the near field modelling, is  
20 known to be conservative as well. So, there's quite a few levels of conservatism added in there.

So, overall, yes, we have modelled the worse case.

**CHAIR:** So, had you thought about the implications  
25 between timing of dumpings? So, you know, is there going to be a difference in the effect if barges are 6 hours apart, 12 hours apart, 24 hours apart or if they are there within a couple of hours of each other?

A. What we have assumed is a one hour gap between the  
30 dumping. We haven't looked at, you know, what would a larger time look like but what I can tell you is that, the dumping is essentially, the tidal currents out there, it's not zero, it's always something. And so, when you dump material, it's like a pulse and then the plume

actually moves over a period of time, then you go and dump another pulse and it moves off, so it acts in pulses.

5 The actual timing is somewhat irrelevant. Sure, if it was half an hour or something like that or 10 minutes, it would most likely have some kind of effect but a longer time gap wouldn't change the results to what's been presented.

10 **CHAIR:** What about the capacity if larger barges were used?

A. Haven't been assessed but a larger barge will have a greater initial concentration, say a greater effect when it's first dumped. But the flipside to a larger barge, is that there's less of them if you had a 250,000 cubic  
15 metre volume over a year.

So, you have a larger - you might have a larger effect during the dumping but if you took the cumulative effect over the full year, the effects will be less.

20 **CHAIR:** Given that 5% is stripped out and is able to move, is there potential for long-term cumulative effects beyond the NDA?

A. So, the last figure I put up about the deposition showed that it was quite restrained within 1,000 metres of the NDA centre. That of less than 0.1 millimetre per year,  
25 that's what the models are saying and that's focussed strictly towards the 5% that has been stripped, so the effects are minor.

30 **MS WRATT:** Just talking about the degree of conservatism of your modelling, and this may relate back to previous work but in our reviewer comments there was a comment that the choice of model scenarios was non-conservative in relation to current speeds. The comment was, "High current scenarios have current speeds of 6-7 centimetres per second and

there were observed currents due to disposal monitoring of up to 25 centimetres per second".

Have you got any comment on that?

5 A. I think actually - I didn't bring it with me but what I can tell you is that the measurements range from 6 centimetres per second to 0.19 metres per second, that's based on the Flaim measurement. I don't know where the other measurements came from.

10 So, the actual model and the simulated from the Hine cast are consistent. The range of velocities in the near field modelling have been assumed and you could argue that's not - that they've been - if you use a higher number, you would have had a different answer. But that is addressed in the far field modelling. So, the far  
15 field modelling considers all velocities, different times, and varying throughout a 10 year data set.

And so, all those different velocities are captured in the data set.

20 **MS WRATT:** What have the maximum velocities been in those?

A. I will just grab that for you. Oh, sorry, there's probably confusion between the velocities at the water surface versus the velocities at the seabed.

25 So, when you look through the water column, velocities tend to be higher at the water surface and they decrease as you go towards the seabed.

30 So, what's been assessed in the near field modelling has been on a depth, what we call a depth average velocity. So, you take all the different velocities if you went through the water column and you average them together and you use that number, and that's what's been used in the near field modelling.

So, to give you in the far field modelling and what's been used, so the maximum at the water surface

is - sorry, the mean, 99%, no here it is, the max, 0.81 metres per second at the water surface. 0.42 in the mid water column. And 0.3 at the seabed.

**MS WRATT:** It may be a question I need to ask

5 Mr Peterson in terms of what that comment related to.

A. I think it relates to the depth average velocities that have been used in the near field modelling.

**CHAIR:** Anything else? Why don't we pause there?

10 Department of Conservation, any other questions of the witness?

**MS ARTHUR:** Well, I think I need to wait until we get to talk to Peter, to Dr Longdill, I might have a couple of questions then.

15 **CHAIR:** We can come back then. People, we stand adjourned for lunch. It's currently almost 12.40, we will come back at 1.40, so we stand adjourned until then, thank you very much.

20

**Hearing adjourned from 12.40 p.m. until 1.40 p.m.**

**CHAIR:** Okay, people, we are reconvened, welcome back.

25 Mr Slyfield, we are still in your hands.

**MR SLYFIELD:** I think we are still with Mr Andrews.

**CHAIR:** Thank you, we are back. Mr Andrews, we're with you at the moment. DOC, did you have any further questions of Mr Andrews?

30

**CONNON ANDREWS - QUESTIONED BY MS ARTHUR**

Q. Just a couple of questions. First of all, it's just in relation to your predictions about the values.

A. Yes.

Q. I am assuming, I just thought I'd just confirm it, you are talking about above background levels?

A. Correct.

5 Q. So, they're all the plus stuff?

A. Yes.

Q. Right. And then, the joint statement of experts, the last paragraph in that, which is about the short-term characterisation, it says here that you say it would be  
10 valuable. What does that mean for you?

A. Well, from a scientist's perspective, all data is good. So, anything from where you could collect more data to understanding the dredging process is always positive. And so, that's what that paragraph is saying. So,  
15 anything to do with trying to quantify the effects in the short-term is positive.

That's different from in terms of trying to establish a regime similar to what I discussed before lunch, where you had lots of monitoring sites and  
20 constantly testing it and that adaptive, definitely not that route. If you had some monitoring that characterised the plume and added to the body of science, that would always be useful.

**MS WRATT:** Can I check what paragraph you are referring  
25 to?

**MS ARTHUR:** Paragraph 37 of the joint statements of experts in the field of oceanography dated  
23 November.

Q. Would that help to validate the model that you've been  
30 working on?

A. The issue, as I mentioned, with the ADCPs, which was what Dr Longdill has mentioned, is that even if you do that, you still have severe limitations with that data and will  
it be able to be useful to collaborating the model? I

would say it would be limited with ADCP's technology. It would help paint the picture further but, in my opinion, it won't add any more hard numbers to validate the model.

5 In any kind of dredging project, all the studies are always done on the numerical modelling. They are never validated because you never go and dump first, then model. You always model, then dump. And usually you resort to an adaptive management process to make sure you manage those effects down track.

10 In this case, it's very difficult to do the monitoring.

Q. But would the monitoring not show whether you are in breach? We've got these levels that we're talking about setting, so if you're going to be monitoring it, then you at least show if you exceed what you are expecting?

15 A. At the moment, I think the current conditions are not proposing limits. And so, it's more - the monitoring is more focused on the effect, that is being the flora and fauna and resulting from the dredging operation. So, at the moment, the setting of levels and things is not

20 addressed in the current conditions.

And, in my opinion, it will be very hard to actually monitor in an open water environment to ensure - it's not practical and I don't think there's a technology that you could actually use at the moment that provides real-time information.

25 Q. So, just in relation to the plume, and you're saying some of it is going to go outside of the NDA boundary?

A. Yes.

30 Q. Some of it will. So, looking at where that is in relation to where the EEZ boundary is, am I right in saying that some of that plume will then end up in what is coastal marine area as opposed to the EEZ?

A. Correct, and that was the question that the Commissioner

asked earlier and at lunch we did confirm it, that yes, the 12 mile nautical limit is about 3 kilometres away from the centre of the NDA, with some rough scaling. So, yes, there will be sediment theoretically going over that boundary, although at a very low concentration.

5

Q. The low concentration, it is a discharge though?

A. It's sediment.

Q. Given that you're looking at this from the EEZ perspective, I presume that means you haven't looked at things like what does that mean for the New Zealand Coastal Policy Statement?

10

A. To be honest, you'd have to direct that planning line of questioning to Mr Hay. That's outside my expertise.

Q. That's fine.

15

**CHAIR:** Can I now question you, please, Ms Arthur?

**MS ARTHUR:** That would be most unusual but certainly.

**CHAIR:** You've just flagged something. Do you want to expand that further or are you going to come back to me on that?

20

**MS ARTHUR:** I was assuming we would cover that in the opening submissions for the Department.

**CHAIR:** Thank you, good. It's just that I have noted it.

**MS ARTHUR:** Thank you.

25

**CHAIR:** Have you finished?

**MS ARTHUR:** That is everything, thank you.

**CHAIR:** Mr Andrews, we have completed with you.

**MS ARTHUR:** Sorry, Sir, I just wanted to confirm, when we were talking earlier and we said Dr Longdill may not have actually -

30

**CHAIR:** We are going to come back to that. You have my assurance that the other party to this needs to take on board what Mr Andrews has said and to have the opportunity to think about it and advise their



client.

A. Sure, we discussed this heavily during the joint witness conferencing and I did send a copy of my supplementary evidence to him yesterday as well.

5 **MS ARTHUR:** I am sure it will be fine, I just want to confirm it with him, thank you.

**CHAIR:** Thank you.

**MR SLYFIELD:** The next witness is Mr Childerhouse.

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**SIMON CHILDERHOUSE**  
**QUESTIONED BY MR SLYFIELD**

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**MR SLYFIELD:** Mr Childerhouse has an original statement of evidence that's dated 25 October, plus a joint statement dated the 21st of November, it has a heading "Joint statement of experts" but it was a facilitated meeting because Professor Jeffs who is not participating in an expert capacity, despite his knowledge. Mr Childerhouse has most recently prepared a supplementary statement which is dated the 23rd of November, it was filed last week.

10  
15 **CHAIR:** Which we have read.

**MR SLYFIELD:** Fantastic. Can Mr Childerhouse take that as read, in that case, and then simply focus on providing you a summary of his evidence, rather than going through the supplementary?

20 **CHAIR:** Dr Childerhouse, you can take it that we have read your statement. In fact, we have discussed it as a DMC.

A. Thank you.

**CHAIR:** We would just like you to hit the key points of it.

25  
A. Certainly. If I might just make an opening remark about my original evidence. It states that I am a Senior Research Scientist at Blue Planet Marine in Nelson. Since I wrote that, I have changed employer and I am now  
30 a Senior Research Scientist at the Cawthron Institute in Nelson but, other than that, the evidence all remains the same.

Perhaps the easiest way to provide a quick summary of my original primary evidence, is to refer to

Appendix C on page 28 of my original evidence. Essentially, that is the risk assessment table where I went through the different potential impacts on marine mammals from the proposed activity and assessed risk against them.

5

So, really, I just wanted to touch on the different threats that I considered that were also dealt with primarily in the original impact assessment and associated appendices, such things as reduced foraging efficiency, reduced prey availability, habitat displacement from noise and habitat displacement from other range of activities from the proposed consent, toxicity and bioaccumulation, direct injury to animals from potentially having spoil deposited on them and injury from vessel strike.

10  
15

The vessel strike one was I added and hadn't been covered in the original IA document.

My assessment of all those really was that the impacts were all going to be very localised and I think we've heard this morning the sediment plume is restricted to the consent area primarily. There's some very minor effects potentially outside of that. Those flow on effects from those onto the ecology and benthos could have potential flow on effects to marine mammals within that area but we're not expecting to see any outside that area.

20

25

Overall, the risk I deem to be either low or very low against all of those activities. The only real change is in subsequent discussions with Professor Jeffs in our joint witness statement, I amended my risk assessment from habitat displacement from operational noise from very low risk in my original evidence to low risk, based on some discussions and additional information that Professor Jeffs supplied.

30

I think the joint witness statement we prepared was quite clear, I hope, and I think we agreed on almost all the items that we had before us and the information is provided in that. I don't suggest going back over any of the issues in there.

5

My supplementary statement primarily refers to -

**MR SLYFIELD:**

Q. Can I pause you, Mr Childerhouse? There's one matter out of your joint statement that I wonder if you can just clarify for the Committee. It's in the table at item 6.

10

A. Yes.

15

Q. You have referred there or the two of you have referred to a map in the likely transit routes in relation to marine mammal sightings, that second sentence. Can you clarify what's the position in relation to such a map?

A. So, I had some information provided by the applicant about the potential vessel routes that they were likely to take and I provided that information to Professor Jeffs who has passed that on to his associate who has been undertaking some noise modelling and he's used those transit routes in his assessment of noise impacts.

20

The one issue I was going to refer to was, I think, the issue we didn't resolve at the joint witness statement, was around noise and potential impacts from noise on that, and so that's why my supplemental statement primarily refers to that issue, rather than any of the others which I think we reached pretty good agreement on.

25

I would note that I've been in contact with Professor Jeffs since our meeting last week and he has contracted some additional modelling work on the potential impacts of noise on marine mammals from the activity. I have seen a copy of that draft report but I don't believe it's yet been presented to the DMC. I'm

30

expecting that that will come at some point.

I haven't provided any comment on that in my supplementary statement, other than to flag the fact that it exists and when I see the final version of it, I would appreciate an opportunity to provide some additional comment on that if required.

I guess the key, I might focus a little bit on noise because it was the single issue that I think we didn't really agree on completely. We agreed on lots of the components of it.

Overall, we tried to estimate the impact of noise from the operation but, given we don't know the specific vessels that are going to be used in the operation and we don't have noise profiles from those vessels, it makes it difficult for us to actually assess accurately what may be the impacts.

So, we went to the literature to try and find what we knew about the frequency components and the loudness of the noise we were likely to find from tug and barge operations overseas and use those as a proxy for what we might expect to see in the Auckland operation.

Appendix A of my supplementary evidence has some estimates from the literature that I found. Initial run, there was limited information on noise from tug, so in original discussions we talked about a potential noise of 170-180 decibels with a maximum recorded in the literature of 190 decibels. That's what Professor Jeffs has used in his acoustic modelling which we will see at some point.

Subsequent to that, I went and sought some additional information from the applicant about the actual size and power of the vessels they were using to try and put those proxy vessels we'd found from the international literature into context.

I guess, the key finding from that was, literature certainly says tug and barge operations are within 170-180 decibels range but the vessels that the applicant is likely to be using are much smaller than that. So, vessels around 20-30 metres versus 30-40 metres, travelling at much slower distances, I think the average speed of approximately 6 knots for the barges and self-propelled barges in this operation, compared to kind of 7-9 knots in the international literature.

And then the key noise component is likely to be a result of the size of the engine. And so, again, we were looking at less 1,000 horse power for the vessels we might see used in the Hauraki Gulf, versus 6,000-7,000.

So, once I'd had a chance to think about what the noise profile from the vessels that are likely to be used in this operation and how they compared to the proxies we'd chosen, it turned out the proxies weren't particularly accurate.

So, the estimates that we've looked at, 170-180, are likely to be much larger, I think, than the actual noise that we're likely to see from this operation, given the size discrepancies and the speed discrepancies.

I'll probably leave it there and I'm happy to take any specifics questions on anything in the evidence or joint witness statements.

#### **SIMON CHILDERHOUSE - QUESTIONED BY COMMITTEE MEMBERS**

**CHAIR:** In terms of total noise, you've got that, I think, reasonably well covered. Is there a clear differential in noise profile between the inner gulf and the outer gulf where this is going on?

A. Yes, yeah. The inner gulf based on works that Professor Jeffs has done earlier, it's quite a lot noisier, as you would expect, in the inner gulf and the further out you go the quieter it gets, just the number of vessel  
5 transits declines over that time and the area opens up into deeper water.

**CHAIR:** Because when I looked at your figure of a 0.2% increase, that's of the total number of vessels, isn't it?

10 A. Yes.

**CHAIR:** And, in actual fact, in terms of this area it could be quite a high percentage?

A. Yeah, yes, that's certainly a good point. I didn't have data on the locations of those transits, for instance.

15 **CHAIR:** So, that point concerned me because you're saying it's low but, in actual fact, where they're actually operating, it would be a significant component of noise?

A. Yes. I guess, there's already been nearly 600 trips out  
20 to that area under their existing permit but this obviously would significantly increase that to that area.

**CHAIR:** Does that cause you concern?

A. There's no doubt that if the consent is approved there will be a significant increase in vessel traffic out to  
25 that area. The reason I'm not particularly concerned is the distance over which we might expect to see impacts on marine mammals I believe is low and I've talked about 1-2 kilometres, I think, in my evidence, which was based really on the estimate of 170-180 decibels. I think  
30 subsequent to that, we would expect to see potential behavioural disturbances over smaller areas than that. In fact, the work that Professor Jeffs I'm hoping will present will provide some information on that.

**CHAIR:** I mean, I am a diver, so I have a fair

understanding of how noise goes underwater.

A. Yes.

**CHAIR:** Are these mammals noise inversed?

A. Yeah, there can be significant influx of noise on marine  
5 mammals, ranging from simple changes in how they  
communicate, what frequencies and volumes they  
communicate at, through to displacement from areas,  
depending on how loud and what the nature of it is, right  
through to death if it's really loud.

10 **CHAIR:** So, in actual fact, they just might avoid the  
noise?

A. Yeah, I mean, they're not silly animals. They're like  
humans, you know, people will move away from an obnoxious  
loud noise source, although we do see people go to rock  
15 concerts and come away with burst eardrums.

**CHAIR:** Western Springs, yes.

A. The caveat really with trying to assess impacts on marine  
mammals is it's really hard to do. We have talked about,  
in the joint witness statement, that we believe the US  
20 Nova Government Guidelines are probably the best ones  
available for us to assess impacts against. The simple  
reason for that is that different species react  
differently, they have different hearing thresholds and  
sensitivities. Depending on what their behaviour is, if  
25 they're feeding, mating, resting, travelling, they will  
respond to different level of noise in different ways, so  
it's a really complex thing to do. The Nova Guidelines  
provide a proxy for us to say at about this level we  
might expect to start seeing impacts that could have  
30 significant impacts on marine mammals from behavioural  
change.

**CHAIR:** One of the interesting aspects of this evidence,  
was just the sheer variety of animals that are out  
there?



A. Yeah, well, I mean one of the points we agreed on was there's very little information about the actual proposed site itself but there is a lot of information about the wider Hauraki Gulf and surrounding area.

5           And so, yeah, we have a pretty good idea about what animals might be found in the area.

**CHAIR:** So, what speed do they go?

A. Blue whales can go to 20 knots probably, so we're thinking about 30-40 kilometres an hour. Dolphins  
10           probably in excess of that. White whales will probably go at a few knots an hour as they potter around.

**CHAIR:** They can get out of the way pretty quickly?

A. Yeah, they can do.

**CHAIR:** Okay, that's all.

15 **MR MORRISON:** As a consequence of caucusing and further thoughts, you've shifted in simple terms your position from very low to low?

A. Yes.

20 **MS WRATT:** I have a couple of questions, Mr Childerhouse.

          The conditions that you're proposing in the joint conferencing have changed from the original ones. As I read the original monitoring conditions, they almost read as sort of tick the box, yes, we're doing the monitoring,  
25           so we can tick that box but the reality is that it's not actually very effective.

          So, is the monitoring that you now propose going to be an effective measure or is it still, to some extent, ticking a box?

30 A. The existing consenting observation is required to do visual observations as well as acoustic observations. In the discussions in the caucus, we agreed that the acoustic monitoring really isn't going to add anything. It's an ineffective way of trying to provide mitigation

to marine mammals. Therefore, we haven't proposed that as a condition going forward.

5 Obviously, there are some considerable limitations with visual surveys, even because primarily the dumping will take place at night. The applicants have proposed using night vision and thermal cameras to try and increase their detectability but the reality is, it's still going to be low.

10 I guess, a simple answer is, it's not a particularly effective way of monitoring marine mammals. The reality is there isn't a really reliable way of monitoring them at night. What's being proposed by the applicant is probably reasonable given their level of risk associated with things like dumping. We don't expect there to be a very high risk from animals become underneath the barge when it's emptied and so, I guess, I think the conclusion we came to in the caucusing was that we believed it was important to still undertake visual monitoring, even though we appreciated it would have limited success but it provides the applicants with some guidelines for doing it. I mean, they may see animals close to the vessel, particularly if they're in a self-propelled barge.

15 20 25 It also brings the potential mitigation of marine mammals to the forefront of the mind of the operators when they're doing it and there is potentially some real mitigation benefits from doing it.

30 While you're not going to be able to see particularly reliable to 250-300 metres from your viewing point, on a moonlit night when it's still you may and so at least you're having some potential benefit.

But, again, in the context of risk versus mitigation, given I believe the risk is very low, the operational, we think the mitigation - I think the mitigation being proposed is relevant.

**MS WRATT:** One further question was just in terms of the acoustic monitoring, there is smart technology around these days for doing remote recording of various things, your colleagues have some quite  
5 nice technology for putting in buoys and doing marine monitoring offshore and then being able to transmit that directly back to a location. Have you considered that as an option in this case?

A. Yes, we did. I talk about that in my original evidence  
10 as a possibility and, in fact, we talked about it in the facilitated meeting as well as an option.

The problem is, it's quite technical and it's very expensive and, given the depth of water at the site which I think is nearly 120 metres, it would be reasonably  
15 challenging to deploy a permanent mooring out there, for instance, to try and do that.

Even having a mooring there, you're then required to have some fairly sophisticated technologies in analysing the data, as Professor Jeffs points out, some of the  
20 vocalisations made by marine mammals are inaudible to our ear. So it's not just a matter of listening, you might hear some dolphin whistles and things but some of the whale vocalisations are so low you won't hear them unless you have a sophisticated analytical tool. So, that would  
25 require someone to be monitoring it with the required expertise and the required technology and that would be very expensive.

**MS WRATT:** What you are essentially saying, is you think the risk doesn't justify that expense?

30 A. Exactly, yep.

**MS WRATT:** Okay, thanks.

**CHAIR:** Department of Conservation?

**SIMON CHILDERHOUSE - QUESTIONED BY MS ARTHUR**

- Q. When you were talking, you talked about 250-300 metres.  
5 Have you got a preference about the distance because the 300 metres is what I recall comes from the regulations in the Marines Mammals Protection Act, I think it's talking about 300 metres?
- A. I don't have a specific distance in mind. Obviously, the  
10 further out you go, your detection probabilities decline. To be honest, there's probably little difference between 250 and 300 in practical terms for managing, and so I don't have a strong view on that. I think we agreed on 250 at the caucus meeting but 300 would serve equally  
15 well.
- Q. The distance that the mammals then get away, move away before you start doing anything, I think has again been linked at the 250. Does that make sense to you, that you would dump something if the mammal gets outside of 250  
20 metres?
- A. Yeah, look, I'm not an expert on the dumping process but, from what I've read of the application, most of the material or all of the material goes straight down and takes 1-2 minutes to fall all the way to the sea floor,  
25 other than what remains as suspended sediment. If animal is 250 metres away, they have a minute or two if they want to rush in and try and get under it but it seems really unlikely. So, I think that's a reasonable safety zone to expect.
- 30 Q. Thank you. And then, this is an appropriately trained crew member being talked about?
- A. Yeah.
- Q. Have you got suggestions about what appropriately trained means? There was some suggestion maybe we should put in

a schedule with training requirements?

- A. Yeah, we talked a little bit about that too. There is a range of different options, I guess. The one that has been proposed for Lyttleton Port Corporation work is the Department of Conservation marine mammal observer qualification which is a very extensive two week long course and I don't believe it's warranted in this case, given the risks associated with the operation.

Bridge crews are often used as the observers and more often than not they have no training, so they're told to look for marine mammals and tell us if you see anything. I mean, many mariners are excellent observers but actually there is some skill to knowing what you're looking for and how to do it, particularly when you're having to estimate distances over the water.

So, I have provided some potential texts to the applicant around that but, in essence, I've suggested a short training course for people to undertake that role which would include some information on the identification and estimation of distance associated with marine mammals, so that's later range finders or binoculars or something such as that, that they might choose to use, and then a description of which conditions finally are approved that are relevant to mitigation of marine animals, so that they clearly know what their responsibilities are and the reporting associated with those.

So, those are kind of the elements I would see in an appropriately trained person and I wouldn't expect that to take more than a couple of hours or maybe half a day maximum, and that would be a one-off course that people would do potentially and then they would - in essence, it's to try and build some capacity and focus for people undertaking that role so they know exactly what they need

to do, why they're doing it and how they do it.

**MS ARTHUR:** Thank you.

**CHAIR:** Any further questions? (No further questions).

Thank you, Mr Childerhouse.

5 **MR SLYFIELD:** That brings us to Mr West.

\*\*\*

**SIMON WEST**  
**QUESTIONED BY MR SLYFIELD**

5

**MR SLYFIELD:** Mr West has a supplementary in addition to his original statement and his contribution to the joint statement. I take it that's a statement you are not familiar are, the supplementary?

10

**CHAIR:** No, we are not familiar, therefore he is going to have to read it from 2.

**MR SLYFIELD:**

Q. Thank you, Mr West, you have a copy of that with you?

15

A. I do.

Q. Can you take us through that, please?

A. Right.

**CHAIR:** I think it's very important if we haven't had stuff tabled, that it is read.

20

**MR SLYFIELD:** I entirely agree, Sir.

**CHAIR:** I am sorry that I am having to do that but I think in fairness we need to get the information.

**MR SLYFIELD:** I entirely understand, Sir.

25

A. I fully expected to have to read this. So, the first couple of points are confirming who I am and that I've read the Code of Conduct and the evidence covers issues relating to the presence of vulnerable habitats in the Northern Disposal Area, use of layered chemical sampling, use of the larger grab samples for benthic biota, inconsistencies in foraminifera counting and comments arising from the NIWA review. Discussion on these issues was not able to be completed at the facilitated meeting because we had time constraints.

30

A lot of that was all included in the joint

statement of experts on marine ecology.

I will go on to the first matters outstanding from conferencing.

(Witness reads paragraph 2.1 to middle paragraph 2.3  
5 of supplementary statement)

The names don't matter, so I won't try and pronounce them.

**CHAIR:** I was going to say we will see how well you know your Latin.

10 A. Yeah, my Latin isn't that good.

These were in shallower water inshore attached to rock and shell.

All these rocky habitats were identified to the east of Rakitu Island, forgive me if I mispronounce this as  
15 well, but Rakitu Island which is a known rocky reef outcrop. This is shown in the Sea Change Hauraki Gulf Marine Spatial Plan for 2017, some 20 kilometres north of the disposal area.

(Witness reads from paragraph 2.4 to end first  
20 sentence paragraph 2.5 of supplementary evidence)

I am not an expert on these but my understanding is that is as accurate as they can get.

(Witness reads second sentence of paragraph 2.6 of  
supplementary evidence)

25 I believe these figures were included in the application.

(Witness reads from third sentence of paragraph 2.6  
to end paragraph 2.6 of supplementary evidence)

I mean, there was a small tiny little, less than a  
30 millimetre dot on an A4 page.

(Witness reads first two sentences of paragraph 2.7  
of supplementary evidence)

And it would probably show nothing.



(Witness reads from third sentence of paragraph 2.7  
to end paragraph 2.7 of supplementary evidence)

That would take some 280 hours of underwater video  
operation. That is not including the time it takes to  
5 come up and down and replace batteries and to download  
any video, nor does it include the time to analyse the  
video results which 283 hours would take time to go  
through.

(Witness reads paragraph 2.8 of supplementary  
10 evidence)

With the exception of the foraminifera.

(Witness reads first sentence of paragraph 2.9 of  
supplementary evidence)

What he was suggesting, is that we've got a top  
15 5 centimetres and then this layer below that and  
comparing the concentrations.

(Witness reads from second sentence of paragraph 2.9  
to end paragraph 2.10 of supplementary evidence)

I am not sure whether the numbering has changed  
20 since I wrote this, it seems to have rapidly evolved  
yesterday afternoon.

(Witness reads paragraph 2.11 of supplementary  
evidence)

So, there's no way that we can drop a grab sample  
25 down on a 140 metre piece of spring without being able to  
see the bottom to put it on the spot that the sample in  
the video was seeing. It's just not practical.

(Witness reads paragraph 2.12 of supplementary  
evidence)

30 NIWA or Mr Hook proposed we use a 0.5 by 0.5 metre  
grab sample, so that's an area a quarter of a square  
metre, and that would then be lowered to the seabed, a  
grab sample collected and brought back to the surface,  
and that was proposed at the witnesses conferencing.

(Witness reads first sentence of paragraph 2.12 of supplementary evidence)

In my opinion, that will cause more of an effect than doing the sampling itself

5 (Witness reads from second sentence of paragraph 2.12 to end paragraph 2.13 of supplementary evidence)

As suggested by Mr Hook and a few others.

10 (Witness reads first sentence of paragraph 2.14 of supplementary evidence)

These are animals, foraminifera, they were a calcified shell with a tiny hole in them and the animals live inside.

**CHAIR:** How big?

15 A. Millimetres or less. They are little tiny microscopic -

**CHAIR:** I thought they were.

A. But they occur in the order of several thousand per square metre. So, numbers-wise they are important. But determining whether they are alive or dead, is the big  
20 problem. We've looked at using stains.

(Witness reads from second sentence of paragraph 2.14 to end fourth sentence of paragraph of supplementary evidence)

25 We have taken to say if the shell is broken, then they're probably dead.

To date, a standard reliable method of determining whether foraminifera were alive or dead has not been identified. To date, the use of foraminifera, to date those foraminifera that have exhibited healthy  
30 appearance, such as uneroded shells, have been counted as alive. We don't propose to change how we enumerate them, unless someone comes up with some hard and fast way of doing it which is reliable.

Section 54.

**MS WRATT:** In your final sentence you say, "Unless a suitable method is identified it may be prudent to exclude foraminifera from the species data statistically analysed".

5 A. Sorry, yeah.

**MS WRATT:** There is sufficient other species in the material that you could get?

A. In terms of species number, the foraminifera make up, I suppose there's probably 12 species that are present, I'm  
10 guessing on that, but it's proportionately like that. And then it's a total of about 130 species we found of other biota. The foraminifera occurs at hundreds of thousands per square metre, whereas the other biota might occur at 1 or 5 or less per square metre.

15 **MS WRATT:** So, it is a question of whether you're getting statistically significant data.

A. Whether exclusion of the foraminifera still makes the results valid because when they have such an influence on the result. I did have a look briefly at trying to  
20 exclude them and it basically showed that everything was the same. So, there's not enough diversity and difference to determine whether there's a difference between sites and - but it was a very precursory look yesterday afternoon.

25 (Witness reads from paragraph 3.1 to end first sentence of paragraph 3.3 of supplementary statement)

It's got a set of geographic points, you can use a database to confine it to a certain range.

30 (Witness reads from second sentence of paragraph 3.3 to end 3.4 of supplementary evidence)

So, the Northern Disposal Area is typical of that habitat on the East Coast of the Great Barrier.

(Witness reads first three sentences of paragraph 3.5 of supplementary statement)

So, they don't move around. They sit in one place.

(Witness reads last two sentences of paragraph 3.5 of supplementary evidence)

5

Comments on the NIWA Review Report. Threshold for detecting the location of the disposal mound.

(Witness reads first four sentences of paragraph 4.1 of supplementary statement)

10

So, the layer on which the animal was living on the surface sediment, mix it up and live within it, so it all gets mixed around.

(Witness reads from middle paragraph 4.1 to middle of paragraph 4.3 of supplementary statement)

15

What they are talking about is as the core goes down, there's a little bow wave on the front of it and as that goes down it gets close to the sediment. The bow wave, pressure wave, might push a thin fine layer of sediment out of the way. So, that's what they're talking about. If the core goes down fast, that will happen in a fraction of a second.

20

(Witness reads from third sentence of paragraph 4.3 to end paragraph 4.3 of supplementary statement)

25

The disturbance is obviously not great if they are still present. If it was great, they would not be present.

Nearly done. Sorry to do this after lunch.

**MS WRATT:** I think our eyes are all still open.

**CHAIR:** Yes, you did it to keep us awake.

30

A. At least I'm not going to talk about multivariate.

(Witness reads paragraph 4.4 of supplementary statement)

If that was the case, the application document might have been three or four times larger. There's too much

reading already.

**CHAIR:** The forestry of New Zealand thanks you.

A. I don't know whether it's helpful to explain what it means by power.

5 **CHAIR:** I was going to ask you that as a question. You do need to remind me.

A. Okay. Do you want me to finish this and then go back to the questions?

**CHAIR:** No, just tell me what, I mean I did statistics  
10 but a long time ago.

A. Right. Okay. So, statistically, you're using estimates of what's there and you're trying to compare two estimates of the population. Statistics mean as an indication of how much they overlap or whether they are  
15 separate. Because the estimate - they are estimates, they're not the real population. Sometimes when you compare those, there's going to be some misinterpretations of the results, so there's potential for you to get the answer wrong.

20 So, statistical power is an indication of how reliably you've got the result correct.

**CHAIR:** It will give you a confidence level?

A. It is a confidence, yeah. I mean, the statistical analysis has two error factors, a type 1 and a type 2.

25 A type 1 is saying how true the result is. So, normally that's set at 95%, so that's your normal scientific suggestion, so you know that the result is right. Beta, the type 2 error, is whether you've got the other results correct. So, you might - it's hard to  
30 explain, sorry. It's sort of the false negative type scenario.

So, if you've said that the result was not the same, it might have been the same. It is that kind of thing, as opposed to not being the same but not the same which

is what the first one -

**MS WRATT:** We will take your word for it.

A. You asked the question. It's not easy to explain.

**MR MORRISON:** It is just the averaging of information?

5 A. Yeah, it's a case of accuracy and reliability of the results. So, the power, it's normally set at 0.8, so you get the right result 80% of the time.

(Witness reads paragraph 4.5 of supplementary statement)

10 In other words, there's no point taking so many samples just because we can.

**CHAIR:** I understand that.

(Witness reads paragraph 4.6 of supplementary statement)

15 So, what I'm talking about -

**CHAIR:** I know that one.

A. You know that one?

**CHAIR:** Yes, I'm fine.

A. You don't want to know about multi variables?

20 **CHAIR:** No, I don't.

**MR MORRISON:** I don't know.

**CHAIR:** I will give you a less on tonight.

(Witness reads paragraph 4.7 of supplementary statement)

25 A. The first table is looking at the indicative power analysis that can be reported from those results. We are looking at the univariate results for the mean number of taxa, that is the number of species or taxa that we found per site. The number of individuals and a diversity  
30 index. All of these are single numbers.

So, you can see that power analysis showed for five groups with three cores at each site with an Alpha which is the statistical level of accuracy, 95%. The power was 0.88. Whereas, for the individual, number of individuals

in the mean taxa, the power was significantly reduced.

You can also estimate how many samples would be required based on obtaining a power of 0.8 and that is the last column there which shows four cores would have been sufficient for the number of taxa.

5

That was for a 50% change in the control values. So, the control site, so half of the number of taxa.

If we look for a change, the difference between the control and the test sites in the order of 25% of the control, then you can see that the power is significantly smaller and that the number of samples required is significantly greater.

10

Assuming the same detection difference and standard deviation, the number of groups up to 9, so that includes the conditions currently stand with 8 boundary sites and increasing the replication to 6 cores, the power analysis in such can be reported in the following table.

15

So, again, that's showing that 9 groups with 6 replicates, that the number of taxa will have a power of 0.93, again within the range. And the only one that doesn't have it for the 50% change is the number of individuals and that would require replication up to 11 samples to obtain 0.8% power.

20

And, again, when you look at the 25% change, the power is much lower, the number of samples required quite a bit higher.

25

(Witness reads paragraph 4.9 of supplementary statement)

Now I am open to questions.

30

## SIMON WEST - QUESTIONED BY COMMITTEE MEMBERS

**MS WRATT:** Thank you, Mr West. I am just pondering for  
5 a minute on what you've given us and other broader  
questions, a couple that I had.

So, the sort of conclusion here around numbers of  
samples and statistical analysis, is that now reflected  
in what's in the conditions; can you tell me that or is  
10 that a question that needs to go back to -

A. My understanding of how the conditions have changed in  
the last 24 hours, I believe we're still looking at 8  
test sites around the boundary and 2 control areas, each  
with 6 replicate core samples.

15 **MS WRATT:** So, this analysis has been taken account of  
in the conditions?

A. Yes.

**MS WRATT:** Okay, thank you. A couple of, I guess,  
broader questions. One of the points that was  
20 discussed in your conferencing report was what is  
an ecologically significant impact and particularly  
when you're looking at the boundary of the EPA on  
the basis that the focus really is around ensuring  
there's no impact, no ecologically significant  
25 impact beyond the boundary. And there's some  
discussion there of what thickness of sediment  
would be likely to cause adverse effects and the  
statement is made that in estuary environments 2  
centimetres per year is likely to cause adverse  
30 effects in biota. The information from Beca, as I  
interpreted it, is that the evidence is for a  
deposition rate of NDA boundary of 67 millimetres  
per annum. So, it seems like there's a pretty  
good -



A. There's quite a difference.

**MS WRATT:** Quite a conservative, essentially?

A. Yes. I mean, it's qualified in that witness statement,  
that 2 centimetres is an estuary environment and this is  
5 a deep-water. The science is just not there to say what  
is acceptable or not.

**MS WRATT:** Yep.

A. We theorise it.

**MS WRATT:** You are thinking a deep-water environment  
10 might be more sensitive because the organisms there  
are least exposed to change?

A. Correct, yes.

**MS WRATT:** So, would you think if there was a condition  
being set around a maximum amount of sedimentation  
15 on the sea floor at the boundary is 6-7 millimetres  
a reasonable condition in terms of not causing a  
significant ecologically significant impact?

A. I would say it is but then I put on a practical hat and  
say how are we going to measure that? I wouldn't even  
20 hesitate to work out, I mean there isn't any way of  
measuring that sort of level of sedimentation.

**MS WRATT:** Because when your coring you can't do that?

A. No, the coring doesn't show anything, there's no  
threshold detection in the order of 5 centimetres, not  
25 5 millimetres. So, we are tenfold out in terms of being  
able to detect anything.

**MS WRATT:** Hence, that takes you to some measure of the  
biota of the -

A. That takes us to using the biota in terms of looking for  
30 an effect in that population, whether it is a change in  
species composition, a change in numbers, absence of key  
species.

**MS WRATT:** There was a suggestion in the expert  
conferencing that a statistical test for

significant differences in community structures may be the way to do it, rather than trying to look at individual species?

5 A. Yeah, that's using a multivariate approach to looking at it and also looking at the function of the individual species, so whether they are filter feeders, whether they are surface deposit feeders, whether they're scavengers, that kind of thing. Looking at if something suddenly disappears in one group of animals, then that could suggest there was an issue.

10 **MS WRATT:** You are looking at the diversity and I guess the functionality?

A. It is a functional approach, yeah, but the multivariate is more sensitive because it's including all 130 species in a multi dimensional cloud, so it's trying to think in 15 130 dimensions at once which is not a good thing to do on a Friday afternoon.

**MS WRATT:** No, we don't need an explanation for that one, even on, what are we, a Wednesday afternoon.

20 A. Wednesday, yes.

**MS WRATT:** Thanks for that. Another specific question around, and it is a question that came out of the marine mammal conferencing, was a question around the contaminant levels and the use of the ISQG guidelines.

25 A. Correct, yes.

**MS WRATT:** There was a question around dioxins, PCBs and pesticides noting, "Marine mammals are susceptible to accumulation of dioxins, PCBs and pesticides, including DDT. It would be useful for the marine ecologist to provide comment on how the standards apply to these toxins."

I guess that question is, are there ISQG guidelines for those?

A. There are guidelines for things such as DDT, dieldrin, PCBs. So, they are available and, in our experience, the source sites for disposal of sediments don't have high concentrations of these contaminants.

5           The way that it's been functioning to date, is that we do a series of levels of assessments. So, a level 1 assessment looks at the catchment, the history of it, what the likely contaminants are likely to be. I mean, if you have a catchment which has got orchards and that  
10 sort of thing, then you might expect some sort of pesticides might be present. So, they then get added to the list of chemicals that would be tested in the sediments.

**MS WRATT:** Okay. Has there been some testing for some  
15 of these?

A. There has been, I think there has been, I can't remember off the top of my head whether there had been for DDT or not. I know the Dieron and Erkerole, they're part of the anti-fouling but they're also used in agriculture as  
20 well. They've been tested and they came back less than the detection limit.

**MS WRATT:** Right. So, will those ISQG limits have been set taking account of potential impacts on marine mammals?

25 A. The Sediment Quality Guidelines are for looking at effects of the animals that are occurring within the sediment, so the biota, so the worms and snails and such. From my understanding, they don't go up the food chain to the whales and carry on that way.

30 **MS WRATT:** Okay.

A. Mr Childerhouse may be able to provide more information on that. I'm not a mammals expert.

**MS WRATT:** Mr Childerhouse, do you want to comment on that? As being part of that conferencing group and

posing this question.

**MR CHILDERHOUSE:** Yeah, I guess, some of the toxins in heavy metals do bioaccumulate in marine animals because they're predators. That was why Professor  
5 Jeffs and I identified that. That's why we identified that. It was an area of expertise for us and we were wondering if the guidelines that were being stipulated would kind of be appropriate. If I understand correctly, then those guidelines  
10 are set up for the kind of benthic species.

A. The other thing is, is there a connection between the benthic biota and the marine mammals?

**MR CHILDERHOUSE:** Yeah, and there's a whole range of foraging from benthic through to truly pelagic.  
15 So, there's the potential for something from the sea floor to be ingested by a marine mammal to make its way up the food chain but, given the small area over which the sediment is likely to be placed and the generally large area over which marine mammals  
20 tend to feed, even if they were picking up some from within that area, it probably would be - they wouldn't be feeding exclusively in that area, I would imagine, so they wouldn't get heavy loadings.

**MS WRATT:** Okay, thanks, thank you. I think that's my  
25 questioning for now, thank you, Mr Chair.

**CHAIR:** You're quite happy with the invasive risk as a non-issue for us?

A. Yes, yeah. I mean, the animals in the marinas, yes, they're invasive. They are adapted to spreading and  
30 moving from place to place, that's what they want to do.

The idea is that, okay, once it gets in the barge, it has to go through a series of stages. It has to actually get from the marina sediment into the barge, it's then got to survive being buried by 700,000 cubic

metres, or several hundred thousand cubic metres of marine sediment for 24 hours or more. It's got to then survive being dumped. These are animals that are adapted to living in 2, 3, 5, 10 metres of water. They're not going to survive in 140 metres of water, so anything that hits the bottom, so 95% of the stuff that goes down is going to be buried in the sediment on the seabed and it will be the wrong kind of habitat for them to survive.

There is a small chance that some of these invasive species could spawn in the barge on the way out, so produce a larval stage, which would then be entrained in that volume of sediment that goes to the bottom.

The potential that a small portion of those could be in that 5% that comes off the side but then it's got to get from there to the shore or somewhere where it's going to be suitable for it to settle and we have commissioned a trajectory model which MetOcean provided which suggested that mid water, anything that was in there was going to take somewhere in the order of 3 weeks to reach shoreline or it might even be more than that. Most of the biota, the larval stage only lasts a couple of weeks tops, so none of the species that were present were going to reach shore in a condition where they were prime to settle. So, we're all happy.

**MR MORRISON:** So, I guess, what we're hearing there is in the case of an emergency dumping in the open waters of the tip of the Coromandel, for instance, in the Covel Channel, which has only happened I think a couple of times in the last 10 years or so, whatever, I'm looking around here. So, any emergency dumping there, those sorts of species are most unlikely to survive, one, reaching the bottom alive or reaching the shore in which they could establish?

A. Yeah, the problem with the emergency dumping, is that it can occur in a wide variety of locations.

**MR MORRISON:** Yes.

5 A. Often, those locations might be in shallower water, not at 140 metres of water. So, there is potential that they could be dumped in a location which is shallow enough for them to survive or close enough to shore for them to be transported in a larval stage to shore. But the occurrence of such events is so rare and it's not  
10 possible to plan for them, my opinion is the risk of invasive species falling off the hulls of other vessels or barge vessels travelling to and from the site or and the area is far greater. So, anyone's boat that's moored in the marina, comes out, goes off to the barrier or the  
15 Coromandel, carries a risk of transporting these same species to a site where they specifically go shallow water near shore and anchor.

**CHAIR:** That's good, thank you. Department of Conservation?

20 **MS ARTHUR:** This supplementary evidence, we have just got it now, so I have got a bit of a problem with Mr Duffy not having seen it.

**CHAIR:** We will have the same arrangement, that we can come back to it.

25 **MS ARTHUR:** Thank you, I am happy with that.

**SIMON WEST - QUESTIONED BY MS ARTHUR**

30

Q. This grab or box core seems to be causing a bit of concern between the various parties about whether it's appropriate, whether it's not appropriate, what it's going to do. And part of what you seem to be saying, as

I understand it, is that what you need is something that's quite large to be able to do it?

A. A point 0.5 x 0.5 grab sampler is going to weigh  
5  
somewhere in the order of several hundred kilograms  
empty, and that's then got to be lifted up over the side  
of the boat in a controlled manner so it doesn't swing  
around everywhere, and then you have to empty it into a  
bucket while it's hanging on the pendulum swinging  
around.

10  
Again, we've found having used grab samplers in a  
number of locations in various depths, that the  
reliability of them is not great and that you can drop  
them down to the seabed and then they falsely trigger and  
you end up with an empty grab or they don't bite or they  
15  
empty it out on the way up because a little bit of shell  
got caught in the bucket.

Whereas, with the gravity core system that we've  
been using, it's 99% foolproof, it works every time.

I understand that the areas involved in sampling is  
20  
what the concern is over, in terms of we're taking a  
sample so big, they want a sample that's this big, to get  
those rarer, bigger animals which may or may not be  
present.

Q. So, is there anything else then, I mean recognising  
25  
that's what the issue is, that your core sampling is  
about 100ml?

A. It is 100ml diameter.

Q. And obviously going to this grab half a metre, is there  
anything in between that you can propose - as I  
30  
understand it, the concern is that your 100ml core sample  
is clearly getting samples of the small -

A. True.

Q. But there is a question there about whether things that  
are a bit big are not getting sampled at all and we don't

know what's down there, and that's my understanding about why there is so much questioning about whether we can do something else.

5 A. Yeah, so, I mean, in answer to that, we've added the use of 200 metre long video transits which will look at anything that's growing on the surface, so things like the Starfish, any sea pens or that kind of thing that are sticking up, we will see those.

10 It won't be able to see the stuff that's living below the sediment surface but generally shellfish, crabs and some of the shrimps will leave a burrow access to the surface or a trail on the surface that will show evidence that they were present. That will provide information on what extra large biota are present.

15 **MS ARTHUR:** I think that's probably all I can ask at this stage without having a talk to - before I get into areas I know nothing about.

**CHAIR:** What I am going to do now is have a break to fortify yourselves for the planning evidence.

20 **MR SLYFIELD:** That is a good time for me to raise a potential issue around the planning issue. As I intimated earlier, it has continued to evolve, including over last night. The conditions have been worked on further by Mr Hay today and he's had some time with Mr West and getting input from other members of CRL's team.

25 It would be highly beneficial, I think, to you to allow a little bit of additional time between now and when we resume so that Mr Hay can be confident he's got the inputs he needs from the other members of the team to inform the evidence he then provides about what his best shot at the conditions is at the present time.

30 And I'm thinking something in the order of



30-45 minute adjournment, rather than a 15 minute adjournment.

**CHAIR:** We are presently running ahead of time. That would be useful. So, 4 o'clock we will come back here. We stand adjourned until 4 o'clock.

**MR SLYFIELD:** I think if we can have that adjournment until 4 o'clock and we will see where we can get to within that time.

**CHAIR:** Are you involving other planners? Which planners are you involving?

**MR SLYFIELD:** No, it is not a resumption of the planning conferencing per se. As I understand, there has been an output from the planning conferencing.

**CHAIR:** Which we have got.

**MR SLYFIELD:** That is what it is and Mr Hay can express his view as a planner on those matters but there are certain of the conditions which of course are trying to do the work that he's receiving advice on from other members of the team. Whether they achieve the output that's desired or not as a planner, he says I'm reliant on Mr West's ecology advice, for example, as to whether that works. I can craft a condition as a planner but I need to know whether it works or not.

He's not resiling from anything that was agreed in the conferencing but it may be that he's got further refinements. It is an attempt to really just capture the best set that he can provide you with today because it is a continually evolving set of conditions, it seems.

**CHAIR:** I understand it is an iterative process. What we will do, is we will be back here at 4 o'clock, so we stand adjourn until 4.00.

**Hearing adjourned from 3.21 p.m. until 4.00 p.m.**

**CHAIR:** Right, we will reconvene. We are reconvened.

**MR SLYFIELD:** The next witness for CRL is Mr Hay.

5 Mr Hay has a primary statement of evidence from the  
25th of October and, as of last night, a joint  
statement. And has also prepared, for the purposes  
of providing some guidance today, a supplementary  
statement which is intended to wrap up any loose  
ends from the joint statement.

10 And so, my suggestion, Mr Chair, would be that he  
goes in at that third document, the supplementary  
statement that he has prepared, and talks you through  
that and then we can see if there's anything arising that  
he needs to track back into either of the other documents  
15 to address.

**CHAIR:** Yes, okay, I'll take your guidance.

20

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**DAVID HAY**  
**QUESTIONED BY MR SLYFIELD**

5

Q. Good afternoon.

A. I will just check that everyone has the documents I will be referring to. There is my summary statement which I  
10 will read, there's the proposed conditions of consent that were attached to the rear of the joint statement of planners.

**CHAIR:** Mr Craig Shearer is yet to sign it, he is going to sign it?

15 A. He signed it about 11.30 I think last night.

**CHAIR:** Oh yes he has on the back page, right. That's excellent, great, carry on.

A. Just in 1-3, I give my qualifications and my background and I just note in 4 all those matters I've since read  
20 since I prepared my evidence. And I also note that I did have a meeting with the representatives of the Auckland Conservation Board, I attended the planners facilitated conferencing yesterday, plus I've also read this morning some of the additional information that's turned up on  
25 the website.

5 is now updated, that planners conferencing statement has now been signed and has been circulated.

I do attach to my one the same conditions as you have on the joint statement and will come to that  
30 shortly.

In 6, in response to a request from Fisheries Inshore New Zealand, the fisheries data provided to the DMC from Fisheries New Zealand was further assessed by Trident Systems Limited and their report released to

Fisheries Inshore New Zealand which addressed the questions they had posed.

We haven't asked MPI if it was to be released further and we understand that the DMC doesn't require that report.

5

No matters have arisen which have a material effect on my evidence, except in relation to the scope of the consent and conditions which I address shortly.

10

Scope of consent. I withdraw paragraphs 142-146 of my evidence as I now understand that my recommendation to change the purpose of the consent inadvertently triggered the requirement to also grant consent under section 20 of the EEZ. And I just explain there that the consent holder, if consent is granted, would need to continue to comply with the regulations in terms of the information and notification required for all physical monitoring.

15

Summary of evidence. Section 20G(3) of the Act provides for dumping at sea if authorised by a marine consent. This proposal is a discretionary activity, as the dumping is not within an authorised location.

20

In my evidence, I have considered the matters which the Decision-Making Committee must consider in making a determination on these applications for consent under sections 10, 59, 60 and 62 of the Act. Attachment A to the statement is an updated set of conditions for the Committee to consider in terms of 63 of the Act and what I will do shortly is make some further amendments to that as a result of discussions with both the CRL experts and also some brief informal discussion with Mr Shearer, Mr Riddell and Ms Clerk during the course of today.

25

30

It remains my opinion that the information available to the Committee is both adequate and sufficiently certain so that the Committee is not required to favour caution and environmental protection. I have not

identified any matters in evidence raised or other expert conferencing statements which give rise to a concern that the information available to the DMC is not adequate or sufficiently certain for the Committee.

5           In the event that the Committee considers that a precautionary approach needs to be taken, then this does not override the ability to grant consent. The EEZ Act provides for this proposal as a discretionary activity and provides for the ability for such activities to be  
10 controlled by conditions of consent. The conditions I have recommended, and the conditions, the agreed conditions coming out of the planning conference, will, in my opinion, appropriately control and manage the actual and potential effects of the activity and will  
15 involve monitoring and reporting on the effects of that activity to ensure compliance.

**CHAIR:** So, your statement there, if I may just write it in, is the agreed conditions, rather than your recommended conditions?

20 A. My recommended conditions which in part have been agreed to by the other parties. There's some outstanding matters.

**CHAIR:** In part, okay, fine, thank you.

A. The ongoing disposal in the NDA will cause significant  
25 mortality of benthic biota within the impact area as a result of smothering and/or burial. This effect cannot be avoided but is contained to within the NDA site. To date, no effects at the NDA boundary on benthic biota from the disposal operation has been identified. The  
30 significance of this effect needs to be considered in the context of the very small area being affected and the area being affected has not been identified as having any special or significant ecological value.

Very short-term and spatially limited turbidity

effects will also arise immediately after the disposal and a small percentage of material remains suspended in the water and can be disbursed over a distance of up to approximately 15 kilometres. That was addressed by  
5 Mr Andrews this morning.

**MS WRATT:** That should be Mr Andrews?

A. Yes. Although the disposal operation over time will continue to result in a mound being formed, the spatial extent of this is relatively small and defined.

10 The risk of adverse effects on birds, fish and marine mammals has been assessed as, I will now take that to low because Dr Childerhouse confirmed today he's gone from a very low to a low.

**MR MORRISON:** So delete the "very"?

15 A. Yes, please. Overall, beyond the NDA boundaries no potential significant adverse effects have been identified. The proposed monitoring conditions, in part, are designed to identify if adverse effects start arising at the NDA boundary.

20 In my opinion and based on the evidence of CRL's other expert witnesses, the proposed continued disposal at the NDA site can be undertaken in a manner that appropriately avoids, remedies or mitigates potential significant adverse effects on the environment apart from  
25 the impact on benthic biota within the NDA. This is achieved through the control of material which is disposed of at the site, the nature and rate of disposal, the location of the NDA and the very limited spatial extent in which dumping can occur.

30 In my opinion, the consent can be granted in terms of section 62 of the EEZ Act. In my opinion and in terms of section 62(2) the application does not need to be refused as:

(1) There is no identified practical or efficient

re-use or re-cycling option for the disposal of large volumes of dredged sediment. If more practical and cost efficient options for reuse or recycling of dredged sediment arise in the future then it is likely for economic reasons that the party seeking to disposal of dredged sediment will use those methods rather than paying for the disposal at the NDA site. There are already examples of this in Auckland, including the disposal of dredged material from the dredging of the Mahurangi River which is going to adjacent farmland and the proposed use of dredged material in a reclamation at Westhaven Marina. That consent is due I understand, Mr Morrison, in the next week or so.

But, again, we're talking in that one there about 72,000, so it's a very small scale reclamation.

The potential effects of the disposal are known and have been assessed. Since the original marine dumping permit application was made, a step-by-step process has been followed in terms of identifying and assessing effects. This commenced with the initial site assessment studies, including those done by the University of Waikato. This was followed by a trial disposal period and then the granting of the permit for 50,000 cubic metres and the subsequent monitoring.

The current application is now for a larger maximum annual volume to provide for the likely maximum annual volumes requiring to be disposed of in the future. Through this process and including during the preparation of the IA evidence, review of submissions and expert conferencing, the draft recommended conditions have also evolved and, in my opinion, are now substantially more sound and sophisticated than the current conditions.

In my opinion, adequate information has been received for the Committee to make a decision.

Finally, I am unaware of any circumstances which have now arisen which results in disposal at the NDA site not being the best approach for dredged sediment disposal, when the party requiring the dredged sediment disposal has not secured an alternative disposal method.

5

Mr Riddell in his evidence, paragraph 70, has put forward the proposition that the consideration of alternative methods etc. under section 59(2)(b) needs to be considered for each individual source site. He then progresses this proposition in his paragraph 79 by concluding if consent is granted, it can only be for dredged material from the sites identified in Table 3 of the IA.

10

I am in disagreement with Mr Riddell on this point.

15

That section outlines matters to be considered but consent does not have to be declined if an alternative method of disposal or a practical opportunity to reuse has been identified. It is also my interpretation that this section needs to be considered more holistically.

20

That is, is there any alternative method of disposal to that proposed and/or is there a practical opportunity to reuse, recycle etc. the dredged material to be received at the NDA (taking into account the nature, source and volume of dredged material); with volume being the key.

25 **CHAIR:** What about cost?

A. Yes.

**CHAIR:** We have the MP report which has dealt with a lot of those areas and has shown a considerable differentiation in costs.

30 A. It has.

**CHAIR:** I would have thought you would have advanced that as a reason?

A. Yes, I would but I haven't in this summary.

The IA has identified both alternative methods of



disposal and practical opportunities to reuse, as has the Market Economics report. At the current time, these opportunities are very limited and site specific. I would expect in most circumstances if there was such an opportunity the party seeking to dispose of dredged material would be considering such options before they considered the NDA disposal site.

I remain of the opinion that an adequate assessment of alternatives has been undertaken and there is no basis to limit the consent to accepting dredged material from the potential source sites identified in the IA. If the Department of Conservation was of the view that such an assessment is required and should be undertaken for all dredging operations in Auckland, then the Minister had such an opportunity to seek and then impose this through either the submission process to the Auckland Unitary Plan and then through the Minister's own approval of the Auckland Coastal Plan which forms part of the Auckland Unitary Plan.

I think that would have been a more appropriate process to include the requirement for such an alternative options assessment, if so desired by the Minister for each time dredging is undertaken, rather than now seeking it through a specific consent pertaining to one disposal option.

I will just elaborate that too because we also have to consider section 61 which talks about do you have the, in terms of the information principles, do you have the best available information? When it comes to the best available information, you've got to ask is it unreasonable in terms of cost, effort and time to provide more information to answer that question?

And firstly, I don't think it would be possible to identify now every single possible source site that may

or may not, in the event, use the NDA in the years to come. And secondly, both the cost and the time, and I suppose effort, in assessing the practical alternatives for every single one of those possible source sites is, I think, beyond what you require in order to make this decision.

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Going back to 25, I just conclude that based on the expert evidence and my assessment, in terms of the decision-making criteria, that there is no basis for the application to be declined in terms of section 62(2). In my opinion, granting the marine dumping consent, with the recommended conditions, would be consistent with the purpose of the Act. In particular, granting the consent and the continued operation of the NDA site will not affect the sustainable management of natural resources within the EEZ to meet the reasonably foreseeable needs of future generations; nor impact on the life-supporting capacity on the environment.

Sir, shall we start working through the conditions now?

**CHAIR:** That's an interesting thing because I think that the conditions could possibly evolve a bit further after we've heard from the Department of Conservation and the questioning of the Department of Conservation from us.

I'm wondering what we would achieve by going through them now, when it's an iterative process and they could potentially change.

A. Would it assist the Committee if I just identify, the changes were all agreed upon.

**CHAIR:** Yes.

A. There are a few matters where there is not agreement and I can point out where, particularly Mr Riddle has put forward some alternatives.

**CHAIR:** Yes.

A. There's, of course, a few areas, Sir, where we have to defer to the experts. And there's one or two areas where we're saying it may be a matter, a condition that the DMC  
5 may have to turn their minds to if they consider it's appropriate.

**CHAIR:** We're just going to talk as a team about that and just see if we can get this right. (Committee members confer).

10 Mr Hay, what we're going to do is take up your offer, you only have to point out the areas of agreement but highlight the areas of disagreement. That's where we're interested, quite honestly.

A. Okay. There's one or two things which have evolved today  
15 which I will put forward the alternative wording.

**CHAIR:** Yes.

A. If I may, I will start right up with the very first definition of appropriately trained crew member. This is building on the response to a question to  
20 Dr Childerhouse. I would recommend, and I have discussed this with Ms Clerk and Mr Riddell, there's general but not specific agreement because they want time to consider it. The definition would be "completed specific training related to the estimation of distances".

25 **CHAIR:** What you're going to do is provide it. We're not going to write that all down.

A. Yes, okay.

**CHAIR:** Just highlight and it say you're going to give us the wording.

30 A. I will give you that.

**CHAIR:** Read the wording out to us and we will get it.

A. "Estimation of distances, description of observations conditions, and the detection and identification of marine mammals which may be expected in the NDA".

**CHAIR:** Good one, thank you.

A. Ms Clerk had recommended a range of minor changes to the conditions which we are agreed upon. There is a concern with the interpretation or actually the finding, the data  
 5 needed within ISQG for the EPA. We therefore recommended that we remove the definition of ISQG and we remove the reference to it to the consent and we include in new schedule 7 which would be a version of this table. So, essentially the key data from ISQG. I would give it a  
 10 new heading and we just need to clean a few things up.

I have discussed that with Mr Riddell and Ms Clerk and, again, I understand there's general agreement with the principle of replacing the definition with that as a specific schedule.

15 **MS WRATT:** What happens if the ISQG levels change subsequently? You know, if it's decided that a level in here is actually more - needs to be lower because of the environmental risk?

A. That would have to be subject to a review by the EPA  
 20 under the review provisions of the Act.

**MS WRATT:** Okay.

A. Condition 1A, I still recommend the 250,000 cubic metres. Mr Riddell is recommending a lower volume but, of course, Sir, this was before Mr Riddell had the opportunity to  
 25 review the Market Economics Report.

Condition 2, I recommend 35 years and Mr Riddell was recommending 20 years but, again, that was prior to his review of the Market Economics report.

Go to condition 5, again you will see it's  
 30 highlighted, this is where we would now refer to this new schedule 7, rather than ISQG. Having reviewed it once again with my experts, we would also remove the control sites from that one specific clause because this is about exceedence at the NDA site, not at the outlying control

sites.

Going to 5D and then a new 5A, they are conditions recommended by Mr Riddell relating to the suspended solids. I don't support that because I am unsure what adverse effect the intent of those conditions - yeah, what adverse effects is being managed by those conditions.

**CHAIR:** Okay.

A. Conditions 6 and 7 relate to the sediment characterisation of the source material.

There was a concern that there may be a lack of transparency whether that characterisation testing has been undertaken. Ms Clerk recommended the condition 7A where that characterisation has to be certified that it's been completed in accordance with conditions 6 and 7, and I support that.

Myself and Mr Shearer recommended that there was a time period set for which the EPA had to respond so it didn't sit there forever, and I've recommended 20 working days. It's in blue because there's not complete agreement on that.

A concern has arisen that what happens in the event of an environmental incident in a marina during a dredging operation, I am unaware of such a case to date but if it occurred, I'm recommending condition 7B where the EPA has to be notified immediately. The EPA then can undertake various courses of action, depending what is appropriate.

Mr Riddell's option is in 7B which outlines in more detail the steps he's recommending to then be undertaken.

Condition 8, first of all we split 8 and 8A, where 8A is now the benthic monitoring and that's related to being undertaken every spring, while the core sampling bathymetric monitoring and contaminant analysis doesn't

have to be undertaken every spring, that's set on a volume. Through the various iterations, I had accidentally deleted bathymetric surveys and that's been reinserted in there, and that condition reflects what the expert, oceanographic experts were seeking.

5 The difference of opinion between myself and Mr Riddell is, Mr Riddell was recommending monitoring be undertaken every X years, even if that volume hasn't been achieved. My concern with that, Sir, is two concerns. 10 Firstly, if only 20,000 has been, let's say, disposed of during a one year period, then the bathymetric survey is not going to pick that up. And, I guess, also there's probably a commercial issue there where over time the people using the site need some confidence on the overall cost and of course that monitoring cost is built into it. 15

8A, you will see there have been some changes there reflecting the marine biologists recommendations about what sort of replicates are taken and then the video transects being included in that. You will note in D, Mr Riddell is seeking that that grab or box core samples is undertaken and Mr West just outlined the issues with that. 20

8B is the suspended sediment plume monitoring, which again Mr Riddell is recommending.

25 Again, in terms of 8B, I'm unsure what adverse effect that actual condition is managing and that's why I don't support it.

Condition 9 is just reporting.

30 9A, a slight change there where we've now said it's a 5 month period rather than 4 month period where dumping can still occur. That allows 4 months for the report to be completed if it took right until the last day and then for the EPA to do its review to confirm there's no significant problems.

We will go through. We have added the one hour between each dumping event in 12. That, in part, reflects the observation of Mr Andrews earlier about the one hour you don't have that cumulative effect.

5 We get to 14, the marine mammals condition, which is a condition I have never spent so much time on in all my career on over the years and I'm still to see a whale myself out there. There is going to be a slight change here taking on board the opinion of Dr Childerhouse  
10 expressed to you earlier. Some visual detection for marine mammals is to be undertaken. We had in brackets "by an appropriately trained crew member", that was highlighted on the basis that Mr Riddell was of the opinion that should be defined, which I have now done  
15 earlier on, if you were so minded to include that definition. In the event a marine mammal is detected, it says within 250 metres, I recommend that is now 300 metres, and likewise the later reference to the 250 metres area is also changed to 300 metres.

20 The word "vessels", it may have been Mr Riddell but I may be wrong here, thought maybe a stronger definition of that is required but, Sir, I understand that it's the barge and the tug or the self-propelled barge.

25 14A, the highlight could now come off, the confirming that the person has the required training if you were so minded to accept the inclusion of an appropriately trained crew member in the earlier condition.

**MS WRATT:** You mentioned definition of that, there's no  
30 definition in the current one; are you intending that you will -

A. That is the one I'm going to table after this which I explained right they beginning.

14B, is that the marine mammal species

identification guide will now be provided, and that was recommended by Ms Clerk.

15, a slight change there is the EPA can request an observer, both for the monitoring surveys which we had earlier but also during the dumping activity at the NDA.

16, there's no change.

17, no change.

18, Ms Clerk recommended that was cleaned up and we have accepted all that.

19, no change.

20, no change.

21, it was agreed through the joint conferencing that if during the monthly reporting there had been the previous month a marine mammal detected, then that record would also be sent to the Department of Conservation.

22, again, that whole condition has just been cleaned up of what happens during an unplanned event.

We then get to condition 23. As you will note, 23(ii) is highlighted. It was highlighted for two reasons yesterday. The first reason was, was that the appropriate standard to refer to and could be easily - was that what was being used by the current operators? And then, secondly, is it a condition that the DMC can set in this condition, i.e., is this a matter that the EPA should be concerned about or wish to monitor?

In terms of the standard, yes, that's the correct standard but what we should have said is the biofouling threshold, which is Table 1 of Appendix 2 of that standard, is what should be referred to. But in terms of the second question of whether this is a matter that the EPA should be including in a consent condition, is a matter which the planners thought the DMC may wish to turn their mind to.



**DAVID HAY**  
**QUESTIONED BY COMMITTEE MEMBERS**

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**CHAIR:** What would your recommendation be because often consents refer to various other documents and standards?

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A. Talking to Mr Thompson, this is what they do anyway. I don't think it's needed, in terms of if the MPI has a specific concern about the risk of biofouling or whatever, then the MPI can take action under their Act.

15

The reason I originally recommended because it was a matter that had come up in various submissions and in consultation, it is of major concern. We tried to add some transparency there, that this is a matter which the consent holder is aware of and, you know, is taking action with but we probably got to that position, Sir, where it's actually not - it's in the wrong consent.

20

**CHAIR:** But, you know, on an augier basis the applicant might like to offer it up?

25

A. Yes, that's where we were going and they can. Now we've made some movement today of what is appropriate, it would be helpful if I had a further discussion with Ms Clerk as to how the EPA, whether they would feel comfortable with that.

**CHAIR:** Okay, thank you.

30

**MS WRATT:** We can put it in there though. That would not contradict any other MMR, according to the Act?

A. No.

**MS WRATT:** We can't put conditions that conflict with any other marine management regime.

A. It may be safer if it was offered on an augier basis if it was thought suitable.

**CHAIR:** I think so, too.

5 A. Finally for the agreed conditions, condition 24, this is the NDA Liaison Group. There were two changes to this. Mr Shearer recommended that a representative of each of the dredging operators undertaking dumping activities at the NDA was included, and that makes a lot of sense.

10 It was also agreed that a representative of the Department of Conservation could attend for an information or scientific information gathering purpose, rather than in any regulatory role. We further discussed that with Mr Riddell today and the wording would now be "a marine ecologist from the Department of Conservation".

15 **CHAIR:** Okay.

**MR MORRISON:** Can I just ask the question, you're talking about that Liaison Group. Earlier on we heard that there could well be a Liaison Group involving iwi, is that coming later? Is this 20 excluded now or has that thinking changed?

A. I haven't recommended it because at the time of writing these and as of yesterday, there was no agreement in place with any of the iwi representatives for such group. I think Mr Riddell may have indicated that those 25 discussions with Ngati Rahui, Ngati Manuhiri are still continuing.

**MR MORRISON:** Okay, so at what point do we get to know if that has been agreed or not?

**MR MALE:** I indicated before that we are meeting Ngati 30 Manuhiri and Rehua on Saturday and they are down, I think, to be heard on Monday. I do apologise but it might be as late as early next week before we find that out.

**CHAIR:** Thank you.

A. There are two remaining conditions that Mr Riddell was proposing. Sorry, the first one is a refined one which Ms Clerk put in her report to you. I don't support it because, in my opinion, that is moving into the realms of adaptive management. I also note that the - yeah, there's quite extensive review conditions already in the legislation and I'm unsure why this can't be picked up elsewhere. The same as if this was a Resource Management Consent and if we didn't have the constraint of not being able to adopt adaptive management techniques, I would normally be recommending a condition such as this but I don't think we can under the EEZ.

And then condition 26 is, again, it is a condition you often see in the RMA which Mr Riddell has put forward. Again, I don't support it. I think it's very broad. More importantly, under the Act the EEZ has the powers, if I can just find the provisions, under 141 they have the power of entry for inspection. This is something I've had to learn about over the last few years since the EPA took over the administration of the current consent.

How they use that, is they use the audit process. So, I think, I may be incorrect here, I think there's been three audits to date and there's another audit coming up in a few weeks time. That's when EPA turns up. They have a warrant, so they can basically see anything they want, the computer system is there already, and it's been through that process that administration issues have arisen, they can ask for information or there's an exchange of information and learning going on.

In my opinion, 26 isn't needed because the Act is adequate in terms of providing the EPA the ability to ask for information.

**MS WRATT:** What section of the Act is that?

A. 141, power of entry for inspection.

The only other thing I would note, Sir, is, again, paragraph 1 of schedule 3 on hindsight is not as clear as it could be. I will be proposing we put forward some  
5 alternative wording there so it's much clearer, that start of the characterisation testing of what it's for.

**MS WRATT:** The paragraph that starts, "This methodology sets out a procedure"?

A. That's correct. That's all the comments I have on the  
10 conditions as they stand at this stage.

**MS WRATT:** I would find it helpful, not repeating anything you just said, but just run through and flag the ones that you think particularly the DMC needs to give consideration to?

15 A. In terms of whether the conditions 5(a) and 8B and 5D proposed by Mr Riddell are those conditions that are there to manage an adverse effect -

**MS WRATT:** 5A?

A. 5(d), 5A and 8B, 23(ii) and then Mr Riddell has  
20 recommended 25 and 26. Sorry, when I say Mr Riddell, I should say Ms Clerk as well was recommending them.

**CHAIR:** Any other questions or points of clarification from panel members at this time? (No questions from Committee members).

25 I think that brings us to the conclusion of the day. What we will do is we will stand adjourned until 10.00 tomorrow.

**MR SLYFIELD:** Mr Chair, can I just float a proposition with you before we do that, and that is obviously  
30 there's going to be some further exchange of ideas between Mr Hay and his planning peers, potentially this evening, potentially over the coming days, and I'm not altogether sure when we are expecting to hear from Ms Clerk but it would be useful, I

suspect, to identify that at the conclusion of the evidence there was an opportunity for all of the planners to have a final say as to their position or a joint position that they could table and if  
5 was an agreed position, even if it scoped out the matters that remain still disagreed between them, so that you ended up, at the end of the evidence part of this hearing, with something that all of the planners had had as good a look at if they  
10 could and a definitive position on because at the moment, I think, we're somewhat chasing our tail here?

**CHAIR:** That would be eminently sensible. If we can get the planners to caucus and work through it, then we  
15 welcome that because that just advances it. It narrows further the points of disagreement that we have to deal with, if we grant it. So, yes, make it happen.

**MR SLYFIELD:** I will have some discussions with counsel.

20 **CHAIR:** Okay, that will be fine. That brings us to the conclusion of the day. Thank you very much, one and all, for the way you have conducted yourselves today, it's made my job exceptionally easy and I think we made good progress through the day. So,  
25 all have a good evening and we will see you back here at 9.55 tomorrow.

**Hearing concluded at 4.46 p.m.**