Contents Page: Kenny - Kroon

All written comments received on the MPI salmon relocation proposal, grouped according to surname/business/organisation/Iwi name.

Written Comments Number	Last Name	First Name
376	Kenny Barging Ltd	
408	Kernohan Engineering	
272	Kerr	Jan
299	Kerr	Don
45	Khupson	Dai Za
13	King	Andrew James
16	Kingston	B.M.
343	Kiwrail Holdings Limited	
558	Korowhiti	Aaron
493	Kroon	Hanneke

Written Comment No: 0376

Subject	**Fwd: MPI Potential Salmon Relocation**
From	Valerie Kenny
To	aquaculture submissions
Sent	Friday, 24 March 2017 12:02 PM
Attachments	<<king salmon Farm submission.docx>>

Written Comment No: 0376

Salmon Farm Relocation

Ministry for Primary Industries

Private Bag 14

Port Nelson

aquaculture.submissions@mpi.govt.nz

To: The Salmon Relocation Advisory Panel

My name is Gary Kenny and with my wife Valerie own Kenny Barging Ltd. a Barge Operation in the Marlborough Sounds. I am a fifth generation Commercial Marine operator in Queen Charlotte Sounds and am naturally very keen to see the area maintain its pristine beauty while also providing income for the residents of the area. As a Barge operator our business is involved in many facets of the Salmon Farming industry, net cleaning especially, as well as transporting equipment, and any other work required that our motorised vessel MV Rongowai is especially suited to with her two large sea cranes. Over the years we have helped in the setting up of farms in Queen Charlotte, towing of cages, harvesting of salmon and transporting feed to the farms.

I support the potential salmon relocation process being proposed by MPI because I believe the salmon farm relocation will provide for better environmental, social and economic outcomes.

I understand that by relocating farms from lower water flow sites to higher water flows sites fish performance will improve and therefore the health of the salmon. It will also have a lower level of effect on the seabed which will have positive environmental benefits.

Environmentally, adopting the Best Management Practice guidelines that were agreed by the Council and community is the future for aquaculture globally.

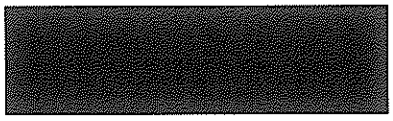
There will be more direct and indirect jobs created if this proposal goes ahead resulting in economic improvements for the communities in the top of the south.

Moving some farms away from baches to more remote locations will improve social amenities which is also a good thing especially from a navigation viewpoint

I would not like to be heard by the hearings panel.

Name: Gary M Kenny

Date:23 03 2017



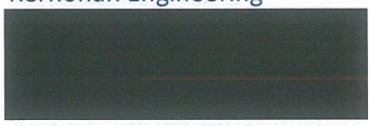
Written Comments No: 0408

Subject	**RE: MPI Potential Salmon Relocation**
From	Mark Sutton
To	aquaculture submissions
Cc	Bridget Kendrick
Sent	Monday, 27 March 2017 11:53 AM
Attachments	<<Kernohan Engineering - Supplier Salmon Farm Relocation Submission.pdf>>

Good Morning

Kernohan Engineering feels strongly about moving from fishing the ocean to farming the ocean and is happy to support with our submission attached, we will be following the proposal with interest.

Best regards
Mark Sutton
General Manager
Kernohan Engineering



From: Bridget Kendrick [mailto:bridget.kendrick@kingsalmon.co.nz]
Sent: Tuesday, 7 March 2017 1:08 p.m.
To: info
Subject: MPI Potential Salmon Relocation

Hi Mark

I'm not sure if you've seen information about the proposed Marlborough salmon farm relocation project that MPI are leading through a consultation process with an independent review panel? If not see attached - there's plenty of background info.

Although the site relocation proposal is led by MPI / Marlborough District Council, we are huge champions and really want it to happen.

It will mean much better farm locations - deeper water, faster flowing currents which will allow us to farm in a more environmentally and sustainable way. Not to mention resulting in better fish health / welfare and the relocation should also allow us to increase our capacity to meet the growing demand for our salmon around the world.

If we have the consent to farm in more suitable waterspace, we will deliver higher quality (ie more Ora King), be more efficient, and meet best practice standards set by ourselves and community stakeholders across all our sites - without losing the ability to grow.

I was hopeful that you might have time to write some words for us - as part of the submission process, we're submitting as individuals and as a company, but also asking for support from our key partners who

feel strongly about the potential for aquaculture in NZ, and the need to make balanced decisions about waterspace.

A submission can be as short as a couple of sentences and all MPI want to hear your comments by the way of a submission and a little bit of reasoning behind it. Your voice in this matter would be very valuable, and we would greatly appreciate any support you could give.

Attached is a submission template – or thought provoker to give you some ideas.

All submissions can be sent to aquaculture.submissions@mpi.govt.nz and must be in by March 27.

I'd be happy to discuss further to clarify anything.

Kind regards

Bridget Kendrick, *Submissions Facilitator*

M: 022 573 6519 | **W:** www.kingsalmon.co.nz | **A:** 93 Beatty Street, Tahunanui, 7011

Kernohan Engineering Ltd

Salmon Farm Relocation

Ministry for Primary Industries

Private Bag 14

Port Nelson

aquaculture.submissions@mpi.govt.nz

To: The Salmon Relocation Advisory Panel

I am the General Manager of Kernohan Engineering, a 40+ year old firm based in Nelson servicing diverse industries across the top of the South.

We are intent on supporting the success of our local economy, and provide a range of solutions to complex industry problems. Our company owner is on the board of HERA. A key focus of their work is to find practical solutions to real work problems such as moving from fishing the ocean to farming the ocean. We feel that relocation of salmon farms within the Marlborough Sounds aligns with this philosophy – seeking to work smart within our regional footprint.

In our view successful companies create downstream positive spin offs economically and socially for us all. Given the current and potential value of the aquaculture industry we feel that its optimisation is essential for our region. We therefore support the potential salmon relocation process being proposed by MPI.

Name: Mark Sutton

Email: [redacted]

Date: 27 March 2017

Phone: [redacted]

Written Comments No: 0272

Subject	**Submission - Salmon Farm Expansion Proposal- Marlborough Sounds**
From	[redacted]
To	aquaculture submissions
Sent	Tuesday, 21 March 2017 10:10 a.m.
Attachments	<<CCF21032017_00000.pdf>>

Dear Sir/Madam

I attach my submission in opposition to this appalling proposal.

Please acknowledge receipt.

Jan Kerr
[redacted]

Written Comments No: 0272

To: Salmon Farm Expansion
Ministry for Primary Industries
Private Bag 14
Port Nelson 7042

Email before 5pm, Monday 27 March2017
to:
aquaculture.submissions@mpi.govt.nz

Written Comments No: 0272

Submission on proposed use of Section 360A of the RMA to allow massive expansion of salmon farming in the Marlborough Sounds

Name of Submitter in full: Janice Kerr

Address: [redacted]
Auckland 1141

Email: [redacted]

Telephone (day): [redacted] Mobile: [redacted]

☒	I am against the whole Ministry for Primary Industries (**MPI**) proposal for "Potential Relocation of Salmon Farms in the Marlborough Sounds"
☐	I would like to speak to my written submission at a public hearing in
☒	I do not want to speak to my written submission at a public hearing

To the Marlborough Salmon Farm Relocation Advisory Panel and Minister Nathan Guy:

I am writing to express my dismay about Minister Nathan Guy's proposal to overrule the Marlborough District Council's (**MDC**) plan and allow for up to six new salmon farms in areas prohibited for aquaculture in the Marlborough Sounds.

The MDC's State of the Environment Report 2015 noted that:

- The Marlborough Sounds biodiversity is NOT in good shape.
- The issues include: fewer fish, not as many species, serious loss of biogenic habitats, sedimentation in estuaries and biosecurity incursions.

The Marlborough Sounds needs proposals for protection and restoration of its natural environment and marine ecosystem, **NOT** proposals for further exploitation and degradation such as this one.
It is submitted that the aim of this MPI proposal, thinly disguised as salmon-farming relocation, is in fact a proposal for the massive expansion of salmon farming in the Waitata Reach area of the Pelorus Sound.

If successful it will mean a cluster of 7 farms in Waitata Reach. It will mean 2 to 3 times more waste discharge spread over a wider benthic footprint. It will mean greater adverse cumulative impacts on the water column.

The Marlborough Sounds needs, we submit, more extensive Marine Reserves, **NOT** more Salmon Farms on an industrial scale as is now proposed by MPI and New Zealand King Salmon (**NZKS**).

The Board of Inquiry drew the limits

In 2012 NZKS applied for nine new salmon farms in areas prohibited for salmon farming via a Board of Inquiry process. They were ultimately allowed three farms. The Board of Inquiry, and then the Supreme Court, made a number of very important findings, which, it is submitted; this proposal is attempting to ride rough shod over.

It is submitted that this is a blatant attempt to try and achieve for NZKS what it failed to get last time around. This time it is being done under the cloak of a relocation scheme. It is submitted that this is a relocation is factually wrong. Two of the salmon farms to be "relocated" do not in fact exist – there has been no salmon farming on the sites for at least five years.

Once again, MPI and NZKS are trying to put new salmon farm sites into outstanding natural landscapes and, it is submitted, ignoring the legal requirements of the New Zealand Coastal Policy Statement and the adverse cumulative impacts on the this iconic landscape.

This proposal, we submit, ignores the Board of Inquiry finding a threshold limit of two new farms in the Waitata Reach and that the Environment Court subsequently echoed this.

The best Place for Salmon Farming?

The existing NZKS operations are suffering from regular (4 in the last 5 years) unusual mortality events. There is a Controlled Area Notice under the Biosecurity Act in place as a result. Pathogens new to NZ have been discovered in the dead salmon.

We submit that the science shows that 17 degrees Celsius is the maximum sustainable temperature for salmon farming, above this trigger the fish become stressed and vulnerable to disease. MDC records show that the Waitata Reach of the Pelorus Sound has summer seawater temperatures exceeding 17 degrees for long periods. These adverse environmental factors combined with poor management practices is, we submit, demonstrated by these regular significant salmon mortality events.

Instead of allocating clean unspoiled water space for new farms and closing old farms, real pressure should be put on NZKS to operate these existing farms in accordance with Best Management Practice Guidelines. It can be done we submit.

Rather, MPI and NZKS seem to be arguing that the prospect of more jobs and profit justifies ignoring adverse cumulative environmental effects in this iconic public space. This so called MPI report is, we submit, paid for by NZKS using an expert who has a history of working for that company. A truly independent review of this report will, like last time, we submit, show these claims are greatly inflated.

This approach quite wrongly, we submit, gives no credence to the adverse impacts on; endangered species such as the King Shag, recreational users, navigation issues, tourism, and struggling nearby scallop beds.

Other Comments:

It seems bizarre to contemplate putting a large and obtrusive salmon farm in the middle of the main channel entrance to the Pelorus Sound for any number of reasons eg landscape impact (adverse), navigational issues. Little thought appears to have been given to the impact of these farms on nearby scallop fields.

I totally disagree with dumping salmon feed (up to 25,000 tonnes per year) made up of mammalian waste into the pristine waters of the Sound, let alone the waste generated by the salmon themselves.

Conclusion: This proposal is fundamentally flawed, environmentally unsustainable and should not proceed!

I also

Written Comments No: 0299

Subject	**Submission on Salmon Farming in Marlborough Sounds**
From	don
To	aquaculture submissions
Sent	Thursday, 23 March 2017 9:50 AM
Attachments	<<Submission on Salmon Farming in Marlborough Sounds.pdf>>

To Whom It May Concern ... please receive the attached submission.

Thanks
Don Kerr
[redacted]

Written Comments No: 0299

To: Salmon Farm Expansion
Ministry for Primary Industries
Private Bag 14
Port Nelson 7042

Email to:
aquaculture.submissions@mpi.govt.nz

Submission on proposed use of Section 360A of the RMA to allow massive expansion of salmon farming in the Marlborough Sounds.

Name of Submitter in full DONALD KERR, [redacted]
Address Marlborough

Email [redacted]

Telephone (day) Mobile [redacted]

✓	I am against the whole Ministry for Primary Industries (**MPI**) proposal for "Potential Relocation of Salmon Farms in the Marlborough Sounds"
	I would like to speak to my written submission at a public hearing in _____
	I do not want to speak to my written submission at a public hearing

---

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The Marlborough Sounds needs proposals for protection and restoration of its natural environment and marine ecosystem, **NOT** proposals for further exploitation and degradation such as this one.
It is submitted that the aim of this MPI proposal, thinly disguised as salmon-farming relocation, is in fact a proposal for the massive expansion of salmon farming in the Waitata Reach area of the Pelorus Sound.

If successful it will mean a cluster of 7 farms in Waitata Reach. It will mean 2 to 3 times more waste discharge spread over a wider benthic footprint. It will mean greater adverse cumulative impacts on the water column.

The Marlborough Sounds needs, we submit, more extensive Marine Reserves, **NOT** more Salmon Farms on an industrial scale as is now proposed by MPI and New Zealand King Salmon (**NZKS**).

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It is submitted that this is a blatant attempt to try and achieve for NZKS what it failed to get last time around. This time it is being done under the cloak of a relocation scheme. It is submitted that this is a relocation is factually wrong. Two of the salmon farms to be "relocated" do not in fact exist – there has been no salmon farming on the sites for at least five years.

Once again, MPI and NZKS are trying to put new salmon farm sites into outstanding natural landscapes and, it is submitted, ignoring the legal requirements of the New Zealand Coastal Policy Statement and the adverse cumulative impacts on the this iconic landscape.

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Instead of allocating clean unspoiled water space for new farms and closing old farms, real pressure should be put on NZKS to operate these existing farms in accordance with Best Management Practice Guidelines. It can be done we submit.

Rather, MPI and NZKS seem to be arguing that the prospect of more jobs and profit justifies ignoring adverse cumulative environmental effects in this iconic public space. This so called independent economics report is, we submit, paid for by NZKS using an expert who has a history of working for that company. A truly independent review of this report will, like last time, we submit, show these claims are greatly inflated.

This approach quite wrongly, we submit, gives no credence to the adverse impacts on; endangered species such as the King Shag, recreational users, navigation issues, tourism, and struggling nearby scallop beds.

Other comments:

We simply cannot continue to privilege expansion of marine farming in the Marlborough Sounds over the environment. We must protect our biodiversity and work to create marine reserves NOT polluting salmon farms. STOP THIS CRAZINESS NOW!!

Conclusion: this proposal is fundamentally flawed, environmentally unsustainable and should not proceed!

Written Comments No: 0045

Relocation of Salmon Farms in the Marlborough Sounds

My name is Dai Za Pau Khupson and I work at King salmon for nearly 2 years. I agree that our farms need to be moved to faster water because it will be good for our fish. They will grow bigger and fatter and be good quality. But it will be very good for the water quality in the sounds and better for the environment. Production will go up and we will have more jobs for Nelson/Marborough. Feed more families in the future.

[redacted]

Pau

20/2/17

Written Comment No: 0013

Subject	**Marlborough salmon relocation**
From	[redacted]
To	aquaculture submissions
Sent	Wednesday, 15 February 2017 3:59 p.m.

To whom it may concern
This is Andrew James King's submission supporting strongly the MPI proposal to relocate 5 salmon farms that have proven to not be ecologically or healthily suitable for commercial production of salmon. I agree that over time by pioneering salmon farming in the area we have learned the hard way what are the characteristics of a healthy salmon farm site. I believe that a correctly sited, well managed salmon farm is good for the community and that a correctly sited salmon farm will have no significant negative impacts on the marine ecology. The salmon farm company should be able to benefit from all the hard earned knowledge it now has and therefore have the opportunity to relocate to sites that are now known to be productive & healthy for intensive salmon production. It has been a hard and expensive learning curve to get this knowledge.

My phone numbers are – [redacted] My address is [redacted]
Picton. I have lived at this address since 1982, which is approximately 34 years. I am a joint owner of a family owned & operated mussel farming business, Kotare Marine Farm. I do not wish to speak at hearings.
I operate a successful mussel farm business that started from nothing in 1979 that is based in Pelorus and now provides an income for three families. I believe I know something about the Pelorus marine environment.

Unfortunately I have to note I regard the Waitata Mid Channel site to be a serious & real navigation hazard. I am familiar with the area and have been there a lot at the wrong time of the day/night in the wrong sea conditions and have to conclude it will cause navigation risk. I do not like the precedent the granting of this site would create. As a long time Sounds resident who has lived & worked in Pelorus I regard one of the significant & valuable features that makes the Sounds special, that defines the Sounds character is the "wide open spaces". It would be a mistake to compromise this, I predict the Marine Farming Industry would pay a high price if this site was granted. The back lash. Over the last 35 years I have seen at least 3 ocean going ships enter Pelorus, one into Crail Bay, one into Beatrix Bay & one around Maud Island. Do we want to stop this?

Kenepuru & Central Sounds Residents Assoc. Until approximately 3 years ago I was a member of this group, I resigned from the group when I realised their unbalanced negative attitude to all marine farming. I know of other long time residents who have resigned from this group for the same reason. They do not represent all residents as they claim to do.
Andrew King
[redacted]

Written Comment No: 0016

Marlborough Salmon Relocation (1)

B. M. Kinnaird
[redacted]
email [redacted]

I feel that overriding the Marl District Council's Sounds management plan is undemocratic. This is not an emergency. Two of the reasons, well publicised, for the relocation are (1) creating jobs (2) increase economic benefits. If I had a plan to grow seaweed as a chemical in it would cure some forms of cancer this would create jobs, make money and save lives. (No ones life is saved by eating salmon) I am quite sure that I would not be allowed to set up my seaweed farm in the Sounds in a bay of my choosing I submit that salmon farms should not recieve preferential treatment.

Another reason given for relocation is to improve environmental outcomes. What if in a few years the seabed under the proposed new sites is only marginally

(2)

better than the present sites. I submit that there should be some onus on the company to clean up the mess they have made rather than just moving on.

Thank you for the opportunity to put my views forward

Written Comment No: 0016

Written Comment No: 0343

Subject	**KiwiRail Feedback - Salmon Farm Relocation Proposal**
From	Rebecca Beals
To	aquaculture submissions
Sent	Monday, 27 March 2017 1:06 p.m.
Attachments	<<KR feedback-Salmon Farm Relocation.pdf>>

Hi,

Please find attached the feedback from KiwiRail on the Salmon Farm relocation proposal for the Marlborough Sounds.

If you have any queries on the feedback, please don't hesitate to contact me.

Thanks,
Rebecca

Rebecca Beals
RMA Team Leader
KiwiRail
(KiwiRail Holdings Ltd)
[redacted]
Level 3, Wellington Railway Station, Bunny Street, Wellington 6011 | P O Box 593, Wellington 6140, New Zealand
Backbone of integrated transport networks

Written Comment No: 0343

KiwiRail

27 March 2017

Salmon Farm Relocation
Ministry for Primary Industries
Private Bag 14
Port Nelson 7042

Via email: aquaculture.submissions@mpi.govt.nz

Dear Sir/Madam,

Feedback on the Potential Relocation of Salmon Farms in the Marlborough Sounds

KiwiRail has become aware that Ministry for Primary Industries is seeking feedback in relation to the potential to relocation a number of salmon farms within the Marlborough Sounds.

Of particular interest to KiwiRail and Interislander is the potential location of salmon farms in proximity to the National Transportation Route.

We note that KiwiRail were not notified directly by MPI of the proposal to change the Marlborough Sounds Resource Management Plan, and this is of concern to KiwiRail in light of being an operator along the National Transportation Route which is provided for in the Plan. KiwiRail would like to seek that MPI engage with us on future proposals in relation to the Marlborough Sounds, in particular along that route.

Attached please find our feedback on this proposal.

Please contact me if you have any queries.

Yours sincerely,

Rebecca Beals
RMA Team Leader

New Zealand Railways Corporation **www.kiwirail.co.nz**
Level 1 Wellington Railway Station, Bunny Street, Wellington 6011
PO Box 593, Wellington 6140, New Zealand Phone: **0800 801 070**, Fax: +64 4 473 1589

Written Comment No: 0343

DETAILS OF PARTY PROVIDING FEEDBACK:

KiwiRail Holdings Limited.
PO Box 593
WELLINGTON 6140
Attention: Rebecca Beals

[redacted]

FEEDBACK:

Tio Point

KiwiRail is a provider of ferry services between the North and South Islands, the passage of which pass through Tory Channel. The Clay Point / Tio Point area is a turning point in Tory Channel and one of the more narrower sections of the route. The identification of Tio Point as a suitable potential relocation site for a salmon farm, without appropriate mitigation to address navigational safety, is a concern for KiwiRail. The establishment of a farm at the Tio Point site will place a farm closer to the recognised navigation route than the existing farm almost opposite this site at Clay Point, both being within 500m which is the recommended separation distance.

KiwiRail have no comment on the other proposed relocation sites.

KiwiRail are not opposed to marine farm activities, however wish to ensure that there is no conflict generated between existing and future marine farms, and activities occurring within the National Transportation Route as mapped in the Marlborough Sounds Resource Management Plan (MSRMP), and the proposed Marlborough Environment Plan (MEP). This concern relates to both construction and operational effects from the marine farms.

Clay Point

KiwiRail was recently involved in the consent application to increase the size of the Clay Point farm, and was keen to ensure that navigational safety was not impacted by the proposal. Further encroachments into the protected National Transportation Route by salmon farms, particularly two almost opposite each other, at the more narrower section of Tory Chanel has a greater risk to adversely impact on the safe passage of vessels. Clarification that the navigational effects report considers the increased size of the Clay Point farm is required to be provided, while this might not exist at this time, it is approved and could therefore alter the navigational safety effects from a new farm at Tio Point.

Passing Ships

While it is common for two ships to pass each other in Tory Channel, it is less common however still possible, for this to occur at Tio Point. In the event that two ships pass each other at this point, the ship heading into Queen Charlotte Sound is on the northern side of the channel. The ship heading towards the Cook Strait is on the southern side of the channel. The effect of two ships passing at this point will be that the separation distance between the ship heading into Queen Charlotte Sound and the salmon farm is reduced even further than the 285m the

Navigatus Report identifies. Consideration of the effect of the wave wash in this event is therefore submitted by KiwiRail as being required through the design of the mooring system for the increased farm, as well as when considering the orientation of any barges / structures located at the farm.

Merely charting the position of a farm does not address navigational risk in terms of passing ships through Tio Point. Consideration of the effect of ships passing at this point, particularly noting that there is also the farm at Clay Point which may impact on the specific route taken by a vessel if it were to pass another vessel at that point, including in relation to the vessel itself being closer to the farm, but also the wash effects, are integral to ensuring that the farm is safely located and able to operate.

Mitigation that restricts ferry operations to ensure these do not pass at this point, is not an effective mitigation, as noted as an option at 4.2.1.3 of the Navigatus Report, albeit that this is proposed in relation to Motukina Point. The enabling of the salmon farms should not impose consequential restrictions on existing activities within the area in order to address the effects the salmon farm creates. Further to that, the practical ability to actually control where vessels pass each other within the route is not identified, and short of a manned facility to address that, KiwiRail are unsure how King Salmon have determined that this is to occur.

Direct Impact

KiwiRail accept that the likelihood of direct impact of a vessel into the farm, subject to it being suitably anchored, is low. This is as identified in the Navigatus Report.

Wash Impacts

We note that the ferry route is not shown in the maps included with the proposal, however is shown as a line in the current MSRMP. KiwiRail wish to ensure that the assumption is not made that the ferries always travel exactly on that line at the time of assessment of any consent applications. The Navigatus report identifies that the defined route is 285m from the Tio Point farm, with a variation of -90m/+110m. KiwiRail note that the route is an indicator and ferries are wide vessels. Therefore allowance in calculations for wash impacts should be made for ships to not always be exactly on the line, and that in the event they were, it would most likely to be middle of the vessel, rather than the edge, and therefore the ships are in reality likely to be closer to the salmon farm than appears to be considered in the navigation assessment included in the proposal.

The wash from the ferries, and any other ships passing through Tory Channel, can cause damage to surface structures if these are not oriented appropriately. The ships generally maintain a constant speed through this area, which is therefore more easily able to be factored into the design. Further, structures placed parallel to the ships track will suffer the least damage.

During construction there will be areas partially constructed, construction materials around, vessels there to facilitate access for workers, and ferries passing creating wash. This all needs to be considered. The Interislander ferries are all located via AIS and therefore able to be tracked, and KiwiRail submit that this needs to be factored in and considered through the construction methodology to minimise any potential damage from the ferry wash during this period. The

Interislander team are available to assist in the review of the methodology in relation to ship movements, or to provide information in the event the contractors require this, to support safe construction.

Breakaway

The existing farm at Clay Point has once broken its moorings which resulted in Tory Channel being closed for ferry traffic for a day. The effect of this on the Interislander operations is significant. We understand that technologies have improved since this time, and wish to ensure that regular inspections and maintenance of the mooring systems occurs to mitigate the risk of a breakaway occurring. This is consistent with the acknowledgement in the Consultation Document (page 58), and in the Navigatus Report at 5.3, however needs to be reflected with greater prescription in the provisions proposed for the MSRMP to ensure compliance.

Further to that, in the event of a breakaway KiwiRail wish to understand how ships in the area are to be advised as per the detail in the Navigatus Report. While ferries will have a pilot exempt master on board who will be familiar with the area (Navigatus Report, 5.1.1 2nd bullet), in the event of a breakaway this is not a situation that can be foreseen or considered to be identified by being 'familiar' with an area.

We note that the GPS tracking of the farm that is proposed emits a signal that a breakaway has occurred (Navigatus Report, 5.1.1, 3rd bullet), however we are unclear as to what that at a practical level means. Are all ships in the area notified, or is the base King Salmon site notified and then this is conveyed to the harbour master for notification to vessels? Delays in notification of a breakaway could lead to a ship being immobilised in the event that the ship and salmon farm collide or there is interference with the propeller system. Clarification around mitigation of both minimise the risk of a breakaway and the procedures to be adopted in the event of one, is necessary.

Adaptive Management

In the event that an adaptive management approach is adopted, there should be clarity around what that can consider. Navigational safety and the efficiency of the National Transportation Route should not be elements suitable for an adaptive management approach, and we note that the discussion on adaptive management in the Consultation Document (Page 22) does not appear to include navigational safety within the suite of elements to be considered. Certainty should be provided at the time of any consent being determined that no adverse effects on navigational safety will arise from the proposal.

Lighting

KiwiRail wishes to ensure that the lighting configuration for the salmon farm minimises the amount of radiant light as this could interfere with safe navigation of ships. Careful consideration should be given to the lighting of the outer edge of the farm (closest to the ferry track) to ensure that the extent of the farm is clearly marked and give depth of field to the navigator.

Plan Provisions

Navigational safety, including in relation to the National Transportation Route, is addressed in the Navigatus Report, and controls are recommended to mitigate the effects of the farm on the use of

that route. The link between those recommendations and the Plan Change provisions themselves as contained in Appendix 1 of the Consultation Document seems to be missing. KiwiRail seek that this missing link be addressed.

MEANS TO ADDRESS CONCERNS:

KiwiRail support that in the event that relocation to Tio Point is included into the Marlborough Sounds Resource Management Plan, that this is provided for as an activity that requires a resource consent. At the very least, this should be a restricted discretionary, if not a full discretionary activity. KiwiRail would not support this being a controlled activity.

Irrespective of whether resource consent is required as a restricted discretionary or discretionary activity, KiwiRail seek that clear and precise assessment criteria and potential conditions around navigational safety in particular, in provided for up front with the application to ensure that a robust assessment and determination of the detail is able to be made by the Council.

KiwiRail would support that an application for resource consent was required to be accompanied by the written approval of the main users of the National Transportation Route also before being approved.

KiwiRail supports the following provisions identified in Appendix 1 of the Consultation Document:

- Rule 35.3.3.2(b), specifically the second bullet point where navigational safety and warning devices and signs are required to be addressed in a consent application
- Rule 35.3.3.2(c) whereby structural safety, including anchoring systems are identified;
- Rule 35.3.3.2(d) whereby plans are required to be approved by Council and implemented in relation to navigational safety and structural safety, and that this includes through the design, establishment and operational stages of the farms development.

KiwiRail seek changes to the following provisions identified in Appendix 1 of the Consultation Document as outlined below:

- That a new provision be inserted seeking that the National Transportation Route be specifically considered and addressed through the development of the navigational safety plan at the Tio Point site, and that this should address:
    - How the risk of breakaways are mitigated, including anchoring design, inspection and maintenance frequencies;
    - The notification process for vessels in the area in the event of a breakaway;
    - How safety clearances are maintained between the farm and vessels using the route;
    - How work vessels in and around the farm are to be operated and managed, particularly with regard to the use of the National Transportation Route;
    - Details of any lighting on the marine farm, both above and below water, and how that is to be designed to ensure there is no interference with vessels using the National Transportation Route;

- That recommendations contained in the Navigus Report be implemented with the exception of the requirement for ferries to avoid passing each other at specific locations within Tory Channel.

PRESENTATION AT THE HEARING:
KiwiRail wishes to be heard in support of this submission.

Written Comment No: 0558

Salmon Farm Relocation

Ministry for Primary Industries

Private Bag 14

Port Nelson

aquaculture.submissions@mpi.govt.nz

To: The Salmon Relocation Advisory Panel

Aaron Korowhiti, Harvest Team, New Zealand King Salmon

I support the potential salmon relocation process being proposed by MPI because I believe the salmon farm relocation will provide for better environmental, social and economic outcomes.

I understand that by relocating farms from lower water flow sites to higher water flows sites fish performance will improve and therefore the health of the salmon. It will also have a lower level of effect on the seabed which will have positive environmental benefits.

Environmentally adopting the Best Management Practice guidelines that were agreed by the Council and community is the future of aquaculture globally.

There will be more direct and indirect jobs created if this proposal goes ahead resulting in economic improvements for the communities in the top of the south.

Moving some farms away from baches to more remote locations will improve social amentities which is also a good thing.

I would not like the opportunity to be heard by the Advisory Panel.

Signature: Aaron Korowhiti

Date: 22.3.17.

Written Comment No:0493

Subject	**submission for Hanneke Kroon against massive salmon expansion**
From	Hanneke Kroon & Joop Jansen
To	aquaculture submissions
Sent	Monday, 27 March 2017 4:42 p.m.
Attachments	<<Submission-Hanneke Kroon.pdf>>

See attachment

Written Comment No:0493

To: Salmon Farm Expansion
Ministry for Primary Industries
Private Bag 14
Port Nelson 7042

Email before 5pm, Monday 27 March2017
to:
aquaculture.submissions@mpi.govt.nz

Submission on proposed use of Section 360A of the RMA to allow massive expansion of salmon farming in the Marlborough Sounds.

Name of Submitter in full	Hanneke Kroon
Address	[redacted] Crail Bay, Marlborough Sounds, 7282.
Email	[redacted]
Telephone (day)	[redacted] Mobile
√	I am against the whole Ministry for Primary Industries (**MPI**) proposal for "Potential Relocation of Salmon Farms in the Marlborough Sounds"
√	I would like to speak to my written submission at a public hearing in Portage or in the afternoon in Blenheim

---

To the Marlborough Salmon Farm Relocation Advisory Panel and Minister Nathan Guy:

I am writing to express my dismay about Minister Nathan Guy's proposal to overrule the Marlborough District Council's (**MDC**) plan and allow for up to six new salmon farms in areas prohibited for aquaculture in the Marlborough Sounds.

1 Introduction

Let me introduce myself.
My husband Joop and I are blue water sailors and sailed our sailboat from the Netherlands to New Zealand, where we arrived at the end of 1994. I have a masters of science degree in electrical engineering from a Dutch university. We worked in Auckland till we retired. Since 2012 we have lived here in the Sounds and were submitters in the Board of Inquiry process.
In 2015 I helped write a paper on salmon farming mortality in the Marlborough Sounds and agreed to become the MPI Biosecurity liaison person for Kenepuru and Central Sounds Resident's Association (KCSRA).
I have participated in the Marlborough Salmon Working Group (MSWG) as a community representative for KCSRA.

2 The Proposal

This proposal from the Ministry of Primary Industries, MPI, is a dictate, to force the Council and the people of Marlborough to give up pristine waterspace for New Zealand King Salmon to exploit and damage. It feels like a

repeat of the 2012 BOI nightmare, fighting yet another proposal for new salmon farms by New Zealand King Salmon. Why is the government now actively helping them to acquire the six farms they did not get?
When considering this Proposal for six new salmon farms in the Marlborough Sounds, five of them in the CMZ1 zoned Waitata Reach in the Pelorus Sound, it makes me very angry and I wonder what has happened with the Decision of the Board of Inquiry in 2012, where it set a maximum of only two farms in the Waitata Reach? That Decision has been through all the courts including the Supreme court. Those two farms are there now, including the seals around and in them, the sharks underneath and the seagulls on top.
If the current proposal goes through, SEVEN large salmon farms will clog up the Waitata Reach. From pristine coastal waters two years ago, it will change within a few years to the highest concentration of salmon farms in the country, its water pollution comparable to the worst of our rivers.

It will change the Pelorus Sound into the coastal equivalent of a chain smoker.
Imagine a chain smoker, smoking a cigarette. With every breath of air, particles and harmful chemicals are drawn into the longs. The same will happen to the Pelorus Sound, with every flood tide the ocean water from the Cook Strait flows through this series of salmon farms at the entrance of the Pelorus Sound, taking with it the waste particles and soluble pollutants from these farms and transporting it to every bay and corner in the Pelorus Sound. The waste amounts to tons of fish effluent per day for every farm.
This plan for five new farms will change the Pelorus Sound into a chain smoker with all the ecosystem health risks attached.

I submit, it is not what the Marlborough Sounds need and it is not what New Zealand need. It will damage the 'clean green image' even further.

The MDC's State of the Environment Report 2015 noted that:

- The Marlborough Sounds biodiversity is NOT in good shape.
- The issues include: fewer fish, not as many species, serious loss of biogenic habitats, sedimentation in estuaries and biosecurity incursions.

This proposal will cause further degradation of the Sounds ecosystem, if it proceeds.
I submit, what the Marlborough Sounds need, is protection and restoration, marine reserves instead of salmon farms.

3 Ministry for Primary Industries (MPI) involvement and the MSWG

The terms of reference for the Marlborough Salmon Working Group sounded sincere and acceptable, considering options for **existing salmon farms to adopt the Best Management Practice guidelines** for Salmon Farming in the Marlborough Sounds, and to ensure the enduring sustainability of salmon farming in Marlborough, including **better environmental outcomes** including landscape, amenity, social and cultural values.
Except it was not the real agenda. We went on two trips into the Sounds, to see existing salmon farms and the locations of relocated salmon farms. The BMP guidelines were not going to be implemented on existing farms, that was never the intention. In return for implementing BMP guidelines NZKS was to get new farming space, where they wanted it and allowing them to massively expand their salmon production.

3.1 The real agenda

Relocation was used to sell this grab for pristine waterspace in an area prohibited for aquaculture. Relocation, where the existing farm structures are not re-used, where the existing feed levels do not stay the same, only the number of farms stays the same.
The Marlborough Salmon Working Group was merely window dressing, the Minister has to be able to show that he consulted widely. The meetings were dominated by the MPI Aquaculture promotion arm from Nelson, the

advice report was written by MPI Nelson and confidentiality meant that no one could be consulted on the mountain of reports we received. It was not a level playing field, as MPI Nelson and NZKS had started work on this project years ago and knew what the end game was.

Similar to the BOI process, this project has to be of regional or national significance. Nine salmon farms was enough to meet the threshold of national significance required for the BOI. In the end only 3 were allowed, which can hardly be considered as nationally significant, it is not even regionally significant as it did not deliver on the suggested number of jobs.
The current proposal is to 'relocate' six low flow farms, half of them without farm structures or salmon. The two Crail Bay farms have never even been farmed by NZKS, but they all need to be 'relocated' in order to meet BMP standards.
The consents for all these farms are up for renewal in 2024, except Ruakaka, where the consent cannot be renewed after its expiry in 2021. The 'relocated farms' will have a consent term of 20 to 35 years and run until 2038 as a minimum and beyond 2050.
All our arguments within the Salmon Working Group fell on deaf ears, it could not be less than 6 farms and the reason for it was not divulged until the 5th meeting.

3.1.1 Section (360) special aquaculture regulations

We were given a roadmap, showing that instead of the normal RMA plan change process, where the decision is made by MDC, an untried, untested RMA s360(a to c) aquaculture regulation would be used. It requires the project to be of regional or national importance.
I submit that it is wrong to assign regional or national significance to this proposal, as it is artificially inflated to boost the claim of even regional importance.
I submit that plan change requests for the Marlborough Sounds Resource Management Plan should be handled by the Marlborough District Council, which allows for the possibility of an appeal to the environment court.
I submit, it is an abuse of power for the Minister to override the MSRMP, which has gone through its consultation rounds with the Marlborough people.

I submit, that the advice to the Minister has to be, that the Section 360 route should not be taken, because it denies the people of Marlborough their democratic rights.

4 Regulations and Environmental Requirements for salmon farming

Mass mortalities from disease outbreaks can cause major economic losses in finfish farms. The prevention of disease through good environmental management and operational procedures are the best methods of fish health management. Stressed fish are less able to tolerate other stressors and are more susceptible to disease. In most salmon growing countries, there are regulations to ensure healthy growing conditions, notification of authorities of suspected disease or elevated mortality, as well as biosecurity measures, such as dead salmon disposal and record keeping.

4.1 Regulations

From a 2013 NIWA report on international regulations regarding salmon farming[1]:

[1] Comparison of the international regulations and best management practices for marine finfish farming
Carina Sim-Smith and Andrew Forsythe, National Institute of Water & Atmospheric Research Ltd, October 2013. MPI Technical Paper No: 2013/47

New Zealand is the only country that does not have legislated aquaculture monitoring requirements and regulations on permitted environmental standards. Creation of aquaculture regulations is likely to remove inconsistencies in environmental standards and enable better enforcement of environmental standards.

From NZKS Operational report[2]:
*The objectives of the **Environmental Policy** are a commitment by New Zealand King Salmon to:*
- *Meet the requirements of the relevant legislation and*
- *Meet the requirements of the Aquaculture New Zealand environmental code of practice for salmon farms "A+".*

The actual situation:
- There is no relevant legislation in New Zealand, no aquaculture monitoring requirements and regulations on permitted environmental standards.
- The A+ code is only a framework with boxes to tick. It does not prescribe anything, such as minimum or maximum levels, or what parameters should be monitored.

I submit, that MPI should take care of proper aquaculture regulations first, before promoting more salmon farming. Commissioning the NIWA report was a first step in the right direction, but it needs to be followed up.

4.2 Environmental Requirements

The NIWA report on international regulations lists the **best management marine environmental suitability requirements for salmon farm locations** as a series of Do's and Don'ts as follows:

- Water temperature below 17 °C. Ideally between 11 and 15 °C.
- Be an erosional (not depositional) environment with water velocities strong enough to disperse solid wastes, but not stronger than the typical swimming speeds of the cultured species.
- Have a water depth at least twice the depth of the net-pen to allow good water exchange and dispersal of solid wastes. Distances of <5 m between the bottom of the external net (may be a predator net) and the sea bed are considered insufficient to allow dispersal of particulate waste.
- Not be exposed to frequent or extreme weather or sea-state conditions.
- Not to be sited in areas frequently subjected to harmful algal blooms.
- Not to be sited in areas of high ecological significance or used by sensitive wildlife populations.
- Not to be sited in areas where there are high concentrations of predators or pests of the cultured species, or too close to other fish farms.
-

4.3 Existing farms and environmental suitability

The current situation with the NZKS farms according to the Operations report is:
High water temperatures (>17 °C) and low dissolved oxygen (<6 mg l^{-1}) are a problem at Otanerau and Ruakaka during summer, and to a lesser extent, at Waihinau and Forsyth. Forsyth and Ruakaka are located in low-flow environments (<4 cm s^{-1}), Waihinau and Otanerau are located in moderate-flow environments (6–9 cm s^{-1}), and Clay Point and Te Pangu are located in high-flow environments (15–20 cm s^{-1}). The NZKS farms are all located in relatively shallow waters, with depths of 19–40 m.
Which of NZKS farms meet the best management marine environmental requirements?

[2] NZKS Operations Report – December 2016

Table 1 Application of best management marine environmental suitability requirements to existing NZKS farms

Farm	Temp < 17 °C	Flow > 10 cm/s	Depth > 40 m	Area with possible Algal bloom	Area of Ecological significance	Sensitive wildlife (King Shag, Orca, Hector's dolphin)	Too close to next farm (< 1 km)
Otanerau	NO	NO	NO	YES	UNSURE	YES	NO
Ruakaka	NO	NO	NO	YES	UNSURE	UNSURE	NO
Waihinau	NO	NO	NO	YES	YES	YES	NO
Forsyth	NO	NO	NO	YES	NO	YES	NO
Crail Bay #1, 2	NO	NO	NO	YES	NO	YES	YES
Clay Point	YES	YES	NO	YES	YES	YES	YES
Te Pangu	YES	YES	NO	YES	YES	YES	YES
Ngamahau	YES	YES	NO	YES	YES	YES	YES
Waitata	NO	YES	YES	YES	YES	YES	NO
Richmond	NO	YES	NO	YES	YES	YES	NO

4.4 *Do the Proposed farms meet the international best management marine environmental suitability requirements?*

Table 2 Application of best management marine environmental suitability requirements to proposed farm locations

Farm	Temp < 17 °C	Flow > 10 cm/s	Depth > 40 m	Area with possible Algal bloom	Area of Ecological significance	Sensitive wildlife (King Shag, Hector's dolphin)	Too close to next farm (< 1 km)
Blowhole Nth	NO	YES	NO	YES	YES	YES	YES
Blowhole Sth	NO	YES	YES	YES	YES	YES	YES
Mid Channel	NO	YES	YES	YES	UNSURE	YES	NO
Richmond Sth	NO	YES	NO	YES	YES	YES	YES
Horseshoe Bay	NO	YES	NO	YES	YES	YES	YES
Tio Point	YES	YES	NO	YES	YES	YES	YES

I submit, that none of the proposed sites in the Pelorus Sound meet even the essential requirement for sea water temperature. The Pelorus Sound is too warm in summer, stressing the fish and predisposing them to disease.

4.5 *Algal Blooms*

The whole of the Marlborough sounds experiences Algal blooms, in Tory channel the Harmful Algal blooms cause regular closures for shellfish gathering or harvesting[3].
I submit, that the risks associated with algal blooms have not been investigated in any of the reports.

[3] http://mpi.govt.nz/news-and-resources/media-releases/public-health-warning-marine-biotoxin-in-shellfish-7/ 20170303 The Ministry for Primary Industries (MPI) today issued a public health warning advising the public not to collect or consume shellfish harvested from Onapua Bay located in the Tory Channel, Queen Charlotte Sounds, Marlborough. Routine tests on shellfish samples taken from this region have shown levels of Paralytic Shellfish Poisoning (PSP) toxins above the safe limit of 0.8 mg/kg set by MPI. Anyone eating shellfish from this area is potentially at risk of illness.

2011 summer phytoplankton bloom (in green)

5 Recent Mortality Events

Several mass mortality events since 2010 have been costly for NZKS bottom line, costly for the Marlborough Sounds marine environment and costly for New Zealand's clean green image.
From the table below it can be seen that NZKS is not alone in experiencing these high mortalities, they are not even the worst one. They are unique in the sense that the mortality events in 2013 and 2014 were not reported anywhere in the media. It was not even reported to MPI Biosecurity, the regulator who has to be informed about any "unusual mortality event". Unfortunately there is no clear, quantitative description, only the vague "unusual".

Table 3 Worldwide mortality figures for farmed salmon.

Mortality figures (percentage of total farmed fish averaged over a year) from: http://www.globalsalmoninitiative.org/sustainability-report						~50% of total farmed salmon worldwide	
~ 70% of total farmed salmon worldwide		2013	2013	2014	2014	2015	2015
Country	Company	Atlantic Salmon	Chinook Salmon	Atlantic Salmon	Chinook Salmon	Atlantic Salmon	Chinook Salmon
New Zealand	NZ King Salmon		13.61		16.32		14.59
Australia	Huon	6.38		7.71		7.12	
Chile	AquaChile	7.00		8.80		7.65	
	Blumar	5.85		4.18		5.00	
	Camanchaca	4.70		3.10		6.60	
	Cermaq	8.98		9.73		6.00	
	Los Fiordos	13.90		9.80		7.22	
	Marine Harvest	3.33		2.15		11.99	
	MultiexportFoods	9.55		3.48		3.58	
	Ventisqueros	6.20		5.13		4.73	
Scotland	Grieg Seafood	9.80		11.60		12.3	

	Marine Harvest	6.40		14.40		10.36	
Canada	Cermaq	5.56		7.06		7.20	
	Grieg Seafood	6.80	3.2	5.20	0.9	14.30	no data
	Marine Harvest	6.61		6.88		7.40	
Faroes	Bakkafrost	4.96		4.86		3.87	
	Marine Harvest	2.10		2.84		2.08	
Iceland	Fjardalax	4.40		13.40			
Ireland	Marine Harvest	38.56		18.15		19.14	
Norway	Cermaq	4.25		4.09		6.2	
	Grieg Seafood	9.00		10.90		6.6	
	Marine Harvest	4.72		4.76		5.26	
Average mortality		8.05	8.41	7.53	8.61	7.73	14.59
Average normal mortality (Excludes mortality > 10%)		**6.14**		**5.61**		**5.77**	

As can be seen the global figures show an average normal mortality rate of 6-6.5% per year. Mortality rates higher than 10% are caused by an abnormal event, like salmon disease, sea lice infestation, high water temperatures, low dissolved oxygen levels, algal blooms, etc..

Regarding the unusual high mortalities we found the following incidence reports/commentary on the web:

- 2013 Ireland Marine harvest reported mortality due to Amoebic Gill disease (AGD) and in 2014 due to abundance of jellyfish at exceptionally high sea water temperature
- 10 December 2013 ... CHILE - An outbreak of Infectious Salmon Anaemia (ISA) has been detected on a fish farm in Chile. ...
- October 9, 2015 - Aquaculture News, News-Europe: Sea temperature rise proves costly for Scottish fish farmer Marine Harvest (Scotland). The health issues related mainly to sea-lice, algae and amoebic gill disease – all of which can be exacerbated by the smallest changes in temperature and be ruinous for salmon production.

5.1 Timeline of NZKS mortality events

- March 2012 Mass mortality at Waihinau farm, reported to MPI biosecurity.
- July 2013 Tests for disease pathogens was negative[4].
- **2013 and 2014 No explanation of mortalities, no reporting to MPI, nothing at all on the web or in newspapers about the NZKS elevated salmon mortalities.**
- February 2015 Start of a large salmon mortality event in Waihinau farm Pelorus.
- March 2015 Marlborough Express headline: "Millions lost after warm seas kill salmon" [5]
- May 2015 Unusual mortality event reported to MPI Biosecurity.
- June 2015 Two salmon pathogens found – an unwanted Rickettsia-like organism and the bacterium *Tenacibaculum maritimum.*
- October 2015 Announcement by MPI biosecurity unit of the unusual mortality rates and the two bacterial organisms found in the Marlborough Sounds;
  implementation of BMP Biosecurity Management Plan at all NZKS farms with immediate effect.

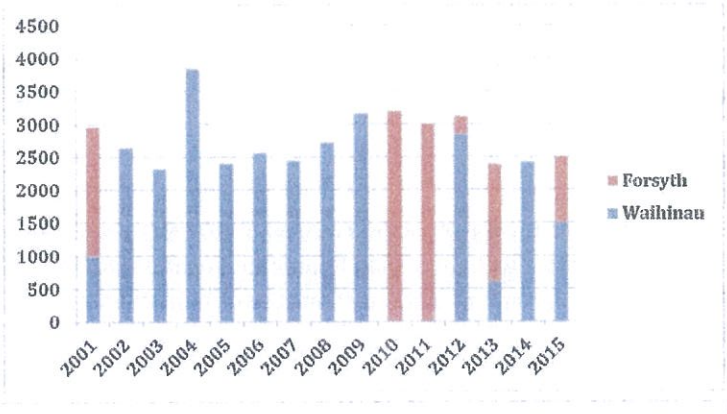
[4] Salmon Mortality Investigation REW-1017 Pelorus Sound
MPI Technical Paper 2013/19 Timeline of events for New Zealand King Salmon regarding the salmon mortalities
[5] https://www.google.com/url?q=http://www.stuff.co.nz/marlborough-express/news/67314620/Millions-lost-after-warm-seas-kill-salmon

- April 2016 Controlled Area Notices put in place by MPI biosecurity unit, one for the Pelorus Sound and one for the Queen Charlotte Sound / Tory Channel.
- June 2016 The Rickettsia like organism (RLO) has been sequenced. It is similar to the Tas-RLO, which was detected in Tasmania in 2005 and 2009 in their farmed atlantic salmon.
- February 2017 National Business Review: NZKS reveals a 11% mortality rate for 2016[6].
- March 2017 No Report yet on the Salmon Mortality Response, already promised for months by the MPI biosecurity unit.

5.2 The story behind the mortality events

The "hotspot" for mortality events seems to be the Waihinau Farm in the Pelorus Sound.

Table 4 Waihinau and Forsyth farm feed inputs between 2001 – 2014



Waihinau and Forsyth farms are alternately stocked, allowing fallowing of a site for seabed recovery. Between May and November there are usually two year classes on the farm, the new smolts as well as the grown fish ready for harvesting.

2012 Mortality event

In 2012 the Waihinau farm was stocked and experienced a mortality event, that made it into the media and was eventually reported to the MPI biosecurity unit.

From the MPI investigation report:
On 1 March 2012, the New Zealand King Salmon Company (NZKS) notified MPI of a significant mortality event occurring in Chinook salmon at their sea farm in Waihinau Bay, outer Pelorus Sound.
An epidemiological and laboratory investigation was carried out to:

- Determine whether the mortality event in Chinook salmon reported from Waihinau Bay, Pelorus Sound was associated with an infectious agent,
- Rule out OIE listed diseases which can cause Chinook salmon mortality.

Mortality in March was higher than typically expected at all cages across the Waihinau Bay salmon farm site. Some of the fish showed **skin lesions**, reduced feed intake, and exhibiting lethargy.
The mortality appeared to peak in mid-March, but still remained higher than expected as moribund fish continued to drop out of the population. By the beginning of May, the mortality rates had reduced to normal.

[6] https://www.nbr.co.nz/article/nz-king-salmon-says-shifting-salmon-farms-would-be-win-win-jr-p-200198

Environmental factors, such as dissolved oxygen and water temperatures are routinely monitored by the farm, but no obvious changes were observed by the farm operator that would account for the increased mortality, such as higher than usual water temperature, decreased dissolved oxygen or algal blooms. No recent husbandry activities such as grading or changes to feed were evident.

According to Alistair George Brown, the Australian aquatic veterinarian for New Zealand King Salmon[7]:
An event mortality occurred at the Waihinau Bay farm at the end of February 2012, peaking in early March. The accumulated mortality reached ~25%. The event was characterised by the **presence of skin lesions**, lethargy and loss of appetite.

In 2012 16 tests for viruses were done, all with negative result. A general test for bacterial infections was done, again with negative result. The tests were repeated in a laboratory in Norway, specifically excluding ISAV.

Retesting in 2015 showed that the 2012 fish were infected with the same Rickettsia and Tenacibaculum maritimum bacteria, as found during the investigation of the 2015 unusual mortality event.

Looking back, it is hard to believe that none of the Australian fish disease experts present in New Zealand at the time of the Board of Inquiry has even suggested the possibility of a Rickettsia infection, which had happened in Tasmanian salmon during the 1990's.

2013 Mortality event
The only indication of a significant mortality event in 2013 was the 13.6% overall mortality that NZKS reported for 2013 in the Global Salmon Initiative report (see Table 3 Worldwide mortality figures for farmed salmon.). Presuming that this event took place during the summer and autumn of 2013, it cannot have happened at the Waihinau farm, which was not stocked in that period.
At which NZKS farm(s) did the mass mortalities happen this time? In the Pelorus Sound or in the Queen Charlotte Sound and Tory Channel?
I submit, this information should be disclosed when considering the Proposal, as it will underpin the suitability or unsuitability of the Pelorus Sound for salmon farming.
I submit, that MPI biosecurity needs to investigate if in 2013 an unusual mass mortality event occurred and where. If so, why was it not reported to them?
Was it the Forsyth farm this time? Is that why Forsyth was not farmed at all in 2014??

2014 Mortality event
A significant mortality event has also happened in 2014 at the Waihinau farm, despite there being no reports or news about it, except for the hint in the Marlborough Express interview with Mr. Rosewarne in 2015: *The company had changed to a more expensive feed at its Waihinau Bay farm after a* ***high mortality rate last year****, but the feed had not been as successful as hoped.*
Another indication is the 16.3% overall mortality that NZKS reported for 2014 in the Global Salmon Initiative report (see Table 3 Worldwide mortality figures for farmed salmon.).

I submit, that MPI Biosecurity needs to investigate if in 2014 an unusual mass mortality event occurred at the Waihinau Salmon farm. If yes, why was it not reported to them?

2015 Mortality event
In March 2015, NZ King Salmon CEO Grant Rosewarne was interviewed for the Marlborough Express:

[7] Statement Of Rebuttal Evidence Of Alistair Brown In Relation To Salmon Health For New Zealand King Salmon Co. Limited - August 2012

" warm sea temperatures at the company's Waihinau Bay farm, in Pelorus Sound, had contributed to the deaths. Rosewarne would not say for commercial reasons how many salmon had died, or how many fish were at the farm, but said the mortality rate was a "multimillion-dollar problem to solve".
Water temperatures at the Waihinau Bay farm had stayed above 18 degrees Celsius for three months, Rosewarne said. "I don't think we've ever had it quite as bad as this year."

MPI Biosecurity was notified some time in May 2015. KCSRA asked MPI to confirm the name(s) of the farms involved. MPI declined citing various parts of section 9 of the OIA.
From what MPI was prepared to confirm and in subsequent discussions it seems MPI has ruled out feed as a primary causative agent. MPI believed water temperature alone not to be the primary cause either. They preferred to point to a range of possible causative factors.

The following is a description of the sick salmon:
In the summer months of 2015 Chinook salmon, Oncorhynchus tshawytscha (Walbaum), were submitted to the New Zealand Ministry for Primary Industries (MPI) for disease investigation. Gross examination of 10 moribund fish revealed multiple areas of ulceration over all areas of the body including fins and mouth in eight of the 10 fish. Pale livers (n = 4), mottled appearance of the kidney (n = 5) and reddening of the distal intestines (n = 5) were also observed. **As these fish presented with skin lesions**, Piscirickettsia salmonis was included as a differential diagnosis. Testing for this agent was conducted and a Rickettsia-like organism (RLO) was detected by histopathology in seven fish and by molecular methods in three fish[8].

2016 Mortality rate NZKS
From the NBR response of NZKS CEO Grant Rosewarne on an opinion piece:
Ms Kerr has also accused the company of playing down spikes in fish mortality rates, another claim Mr Rosewarne rejects. "We've been upfront saying we don't get a good result on low-flow sites," he says. The company is also still perfecting the appropriate feed for its salmon and is still working on that science. The company's mortality rate in the six months ended December was 4.6% but it's expecting that will rise to about 11% for the full 2016 year.
From his comments, it can be concluded that normal mortality is around 4.6%, but the mortality rate during summer and autumn jumps to around 17%, averaged across all its farms.
Where was the unusual mortality event occurring this time around? Not at Waihinau or Forsyth, they were not stocked over the summer of 2016. We will have to wait a while longer, analyzing the yearly monitoring reports for all the farms and maybe we find a clue.

5.3 Conclusions

Looking back over the sorry saga of high yearly mortalities in NZKS's salmon farms, I submit that it is another confirmation that:

1. the regulations regarding salmon farming have to be vastly improved around the timely notification of suspicions of fish disease or increased mortality rates. Leaving it up to NZKS to decide what constitutes 'unusual mortality' is obviously not working.
2. The Marborough Sounds marine environment is not suitable for industrial scale intensive salmon farming.
3. Additional measures for disease control, incorporating fallowing to break disease cycles, single year class farming and sufficient distances between farms are needed, not just farm wide, but per aquaculture management areas. The Pelorus Sound is one AMA, the Queen Charlotte Sound including Tory Channel is the other.

[8] New Zealand Journal of Marine and Fresh Water Research: First report of a Rickettsia-like organism from farmed Chinook salmon, Oncorhynchus tshawytscha (Walbaum), in New Zealand - October 2016

4. Until the yearly salmon mortality is under control, there should be no further expansion of salmon farming.
5. Until these measures are in place, there should be no further expansion of salmon farming.

6 Disease Risk Assessment

6.1 FAO environmental risk assessment

From a 2008 Fao report[9] on environmental risk assessment and communication:
All activities in coastal areas interact with the natural environment. Coastal aquaculture is no exception, and a wide range of environmental risks associated with coastal aquaculture developments have been described in scientific and other fora, with varying accuracy in their reflection of reality.

Reliable assessment of the significance of these risks should provide a sound basis for decisions regarding new developments. However, this must be done in the face of uncertainty in predicting the environmental response to stresses (hazards).

This report presents a model of ecological risk analysis for coastal aquaculture and guidelines for its application which:

- Is structured to fit into a broader decision making environment which combines social and economic values with science-based predictions of environmental changes and effects;
- Is pre-adapted to enhance the role of risk communication and risk management in the context of transparency;
- Can operate in an open and transparent manner to incorporate information supplied by scientists from government, academia, industry, and stakeholder organisations, and the public;
- Recognises that many of the environmental changes associated with aquaculture activities can also arise from other coastal activities, such as industrial and urban development, tourism, agriculture, fishing and stock enhancement; and,
- Clarifies how uncertainty relates to the precautionary principle and affects decision-making.

6.1.1 Precautionary Principle

The level of precaution applied to the potential environmental effects of coastal aquaculture is likely to vary according to culture and circumstance, perhaps expressed as national or local policy. It has to be agreed. It cannot be established scientifically, although it may be expressed in quantified scientific terms.
Precautions, or at least enhanced levels of caution, are also a natural and appropriate response to uncertainty in the prediction of the outcomes of actions.
A major attraction of the precautionary principle is, that precaution is a natural feature of human behaviour. We are all cautious to a greater or lesser extent, and the degree of our caution is related to uncertainty and lack of information, as well as the probability and severity of an undesirable outcome. The principle arose not from developments in environmental science or the philosophy of science, but rather from an awareness of past failures in dealing with environmental risks, coupled with a 'common sense' approach to dealing with uncertainty.
In practice the balancing of benefits and costs, which has always been part, explicitly or implicitly, of development decision making, has tended to favour development at the cost of the environment. Indeed, it is this imbalance which the precautionary principle is designed to alter.

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[9] http://www.aquaculture.org.nz/wp-content/uploads/2011/06/FAOenvrisk-2008.pdf
Assessment and communication of environmental risks in coastal aquaculture FAO - 2008

6.1.2 Risk analysis process

From the FAO report:
The risk analysis process is built around the concept that some aspect of the activity under consideration (coastal aquaculture) can lead to the release of a hazard, that in turn could lead to an undesirable change in the environment.

Risk: A characteristic of a situation or action wherein two or more outcomes are possible. The particular outcome that will occur is unknown, and at least one of the possibilities is undesired. Risk = Product of the probability of change and severity of change.
Hazard: An agent, medium, process, procedure or site with the potential to cause an adverse effect. A (potential) source of risk that does not necessarily produce risk. A hazard produces risk only if an exposure pathway exists and if exposures create the possibility of adverse consequences.

In the context of this submission, the Hazard is a new salmon farm. The risk in Dr. Diggles report is disease establishment and spread.

Risk analysis provides an objective, repeatable, and documented assessment of risks posed by a particular course of action and answers the following questions:

1. What can go wrong? – Hazard Identification;
2. How likely is it to go wrong and what would be the consequences of it going wrong? – Risk Assessment;
3. What can be done to reduce the likelihood or consequences of it going wrong, or the level of uncertainty in our prediction of the outcome? - Risk Management and;
4. How can the analysis process be made understandable, open and transparent to all with an interest in the management of our marine resources? – Risk Communication.

The Risk Assessment component mentioned above is further broken down into four subcomponent steps following the generally accepted protocol proposed by Covello and Merkhofer (1993)[10]:

1. Release Assessment;
2. Exposure Assessment;
3. Consequence Assessment; and
4. Risk Estimation.

6.2 Dr. Diggles Updated Disease Risk Assessment Report – September 2016.

For the current Proposal, Dr. Diggles has updated his 2011 Disease Assessment Report[11]. This report was written for the New Zealand King Salmon company, to support their Board of Inquiry proposal for nine new salmon farms. So much for independent advise.
One of the many causes for environmental concern with salmon farming is the introduction of exotic diseases and parasites into the marine environment, as salmon farms act as incubators for salmon pathogens.

1. With disbelief we noted, that it changed nothing about his conclusions regarding the seriousness of NZ-RLO and associated mortalities. "*The current risk assessment found that clinical infection with*

[10] Risk Assessment Methods: Approaches for Assessing Health and Environmental Risks 1993rd Edition. by V.T. Covello (Author), M.W. Merkhoher (Author).
[11] Disease Risk Report - Environmental Protection Authority
www.epa.govt.nz/Publications/Appendix%2011%20Disease%20Risk%20Report.pdf
Aug 5, 2011 - ENVIRONMENTAL ASSESSMENT REPORT-. *DISEASE RISKS*. Prepared by: Ben *Diggles* PhD. Prepared for: New Zealand King Salmon.

Piscirickettsia-like bacteria in seacaged Chinook salmon was likely to pose an increased risk of disease transfer to wild fishes, unless additional risk mitigation measures were implemented. He goes on to state: *"However, it also remains recognised that an unquantifiable risk remained that biosecurity leaks could allow exotic diseases to be introduced, and/or new endemic diseases could emerge in salmon aquaculture in New Zealand at some time in the future. Because of this, it was important that biosecurity risks were managed using worlds best practice, notably including establishment of independent farm management areas separated by ideal buffer zones (Diggles 2011)."* This is an improvement over his 2011 report where the conclusion was: *"However, an unquantifiable risk remains that biosecurity leaks could allow exotic diseases to be introduced, and/or new endemic diseases could emerge in salmon aquaculture in New Zealand at some time in the future."*

In an unchanged Appendix 1 – Risk Assessment Methodology, he explains his methodology, which follows the accepted four subcomponent steps, as shown in section 6.1.2.

Presumably Dr Diggles follows his own methodology, because in his report there is not a single reference in his impressive 19 page reference list, to any publication on the subject of Risk Assessment Methodology.
In contrast the FAO report has 33 references for this chapter.

6.2.1 Comparison of the two Risk Assessment Methodologies

The principles and definitions underpinning a risk assessment may determine in part the outcome.

Table 5 Definition of assignable qualitative probabilities.

Likelihood	Definition in Diggles report	Definition in FAO report
High	The event would be very likely to occur	The risk is very likely to occur.
Moderate	The event would occur with an even probability	The risk is quite likely to be expressed.
Low	The event would be unlikely to occur	In most cases, the risk will not be expressed.
Very Low	The event would be very unlikely to occur	**NOT USED**
Extremely Low	The event would be extremely unlikely to occur	The risk is likely to be expressed only rarely.
Neglible	The event would almost certainly not occur	The probability of the risk being expressed is so small that it can be ignored in practical terms

The definitions differ for Moderate, Low and Extremely Low. The FAO report defines 5 levels, Dr. Diggles defines 6 levels, 4 of them in the below 50 % probability. The 50% mark for the FAO is between Moderate and Low.

Figure 1 Table 5 - Matrix of rules for combining release and exposure from Disease Risk Assessment report

		Likelihood of exposure					
		High	**Moderate**	**Low**	**Very Low**	**Extr. Low**	**Neglible**
Likelihood of release	**High**	High	Moderate	Low	Very Low	Extr. Low	Neglible
	Moderate	Moderate	Low	Low	Very Low	Extr. Low	Neglible
	Low	Low	Low	Very Low	Very Low	Extr. Low	Neglible
	Very Low	Very Low	Extr. Low	Neglible	Extr. Low	Extr. Low	Neglible
	Extr. Low	Extr. Low	Neglible	Neglible	Neglible	Neglible	Neglible
	Neglible	Neglible	Neglible	Neglible	Neglible	Neglible	Neglible

In the table above, the white fields values are in table 5 of the Appendix.
The grey fields were blank in the table, but filling them in leads to inconsistencies, that cannot be resolved.

Figure 2 Attempt at correcting Table 5 and making it consistent

Written Comment No:0493

		Likelihood of exposure					
		High	**Moderate**	**Low**	**Very Low**	**Extr. Low**	**Neglible**
Likelihood of release	**High**	High	Moderate	Low	Very Low	Extr. Low	Neglible
	Moderate	Moderate	Low	Very Low	Extr. Low	Neglible	Neglible
	Low	Low	Very Low	Extr. Low	Neglible	Neglible	Neglible
	Very Low	Very Low	Extr. Low	Neglible	Neglible	Neglible	Neglible
	Extr. Low	Extr. Low	Neglible	Neglible	Neglible	Neglible	Neglible
	Neglible	Neglible	Neglible	Neglible	Neglible	Neglible	Neglible

In the table above, an attempt has been made to make the table consistent.
What it shows is that the combined likelihood of release and exposure is a Low Risk or less in 33 out of 36 combinations. Is this intentional?

Figure 3 *Classification of the consequence of establishment of disease or more generally the severity of environmental change.*

	Classification of consequences of establishment of disease agents in Dr. Diggles Risk Assessment methodology	Classification of the severity of environmental change in FAO report
Extreme / Catastrophic	Establishment of disease would cause substantial biological and economic harm at a regional or national level, and/or cause serious and irreversible environmental harm.	- irreversible change to ecosystems performance at the faunal province level or - the extinction of a species or rare habitat.
High	Establishment of disease would have serious biological consequences (high mortality or morbidity) and would not be amenable to control or eradication. Such diseases would significantly harm economic performance at a regional level and/or cause serious environmental harm which is most likely irreversible.	- high mortality for an affected species or significant changes in the function of an ecosystem. - effects would be expected to occur at the level of a single coastal or oceanic water body. - changes would not be amenable to control or mitigation.
Moderate	Establishment of disease would cause significant biological consequences (significant mortality or morbidity) and may not be amenable to control or eradication. Such diseases could harm economic performance at a regional level on an ongoing basis and/or may cause significant environmental effects, which may or may not be irreversible.	- changes in ecosystem performance or species performance at a regional or subpopulation level, but they would not be expected to affect whole ecosystems. - changes associated with these risks would be reversible. - change that has a moderately protracted consequence. - changes may be amenable to control or mitigation at a significant cost or their effects may be temporary.
Low	Establishment of disease would have moderate biological consequences and would normally be amenable to control or eradication. Such diseases may harm economic performance at a local level for some period and/or may cause some environmental effects, which would not be serious or irreversible.	changes are expected to affect the environment and species at a local level but would be expected to have a negligible effect at the regional or ecosystem level. - changes that would be amenable to control or mitigation. - effects would be of a temporary nature.
Very Low	Establishment of disease would have mild biological consequences and would be amenable to control or eradication. Such diseases may harm economic performance at a local level for a short period and/or may cause some minor environmental effects, which would not be serious or irreversible.	NOT USED
Negligible	Establishment of disease would have no significant biological consequences and would require no management. The disease would not affect economic performance at any level and would not cause any detectable environmental effects.	- changes expected to be localised to the production site and to be of a transitory nature. - changes are readily amenable to control or mitigation.

6.2.2 Differences between the definitions of consequence levels.

In the figure 3 above, the FAO report again leaves out the Very Low level definition, creating five levels only, with an emphasis on the levels of severe change to the environment.
The definitions in the FAO report answer the question: How severe is the level of the environmental change?
The definitions of dr. Diggles answer the question: How severe is the consequence of the disease establishment for the natural **and** economic environment.

To sum it up:
Dr. Diggles risk assessment method defines the consequence of an disease establishment not only in terms of changes to the natural environment, but also in terms of economic cost. It begs the question: What if an environmental change has severe consequences for the environment, but minimal consequences for the economic performance? What severity level does it get assigned? What takes precedence? Does economic costs override environment change?
The definitions used in the FAO report are strictly dealing with the level of change to the natural environment, which is how it should be, as all economic endeavour happens within the natural environment. The consequences to the natural environment take precedence over the economic consequences.

6.2.3 Comparing the risk estimation matrices for the acceptable level of protection (ALOP)

Figure 4 An example of a table defining the acceptable level of protection from FAO report

	Severity				
	N	L	M	H	C
H	Accept	Accept	Reject	Reject	Reject
M	Accept	Accept	Accept	Reject	Reject
L	Accept	Accept	Accept	Accept	Reject
EL	Accept	Accept	Accept	Accept	Accept
N	Accept	Accept	Accept	Accept	Accept

Severity = C - Catastrophic, H - high, M - Moderate, L - Low, N - Negligible
Probability = H - High, M - moderate, L - Low, EL - Extremely Low, N - Negligible
Reject = Reject a request for a permit to undertake aquaculture
Accept = Accept the risks associated with permitting the aquaculture to be undertaken

The Risk estimation matrix (Table 7, appendix 1) of the Updated disease risk report has been adjusted for the comparison. The Risk estimation matrix is now showing ALOP as follows, unacceptable risk = Reject and acceptable Risk = Accept.

Figure 5 table defining the acceptable level of protection from Disease Risk report

	Severity					
	N	VL	L	M	H	C
H	Accept	Accept	Reject	Reject	Reject	Reject
M	Accept	Accept	Reject	Reject	Reject	Reject
L	Accept	Accept	Accept	Reject	Reject	Reject
VL	Accept	Accept	Accept	Accept	Reject	Reject
EL	Accept	Accept	Accept	Accept	Accept	Reject
N	Accept	Accept	Accept	Accept	Accept	Accept

Note that the rows for High and Medium likelihood have the same outcome for the ALOP
Note that the columns for Neglible and Very Low severity of the Consequence are also the same.
This is also true for the original Table 7. Something is not quite right there.

6.3 Conclusions

I submit, that there is clear evidence, that there is something substantially wrong with the Risk Assessment Methodology as used by Dr. Diggles in his Updated Disease Risk Assessment Report. This should be investigated at an expert workshop, as it may change the outcome of the resulting detailed risk assessments for the various salmon diseases.