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

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Written Comment No: 0091

Potential relocation of salmon farms in the Marlborough Sounds.

Rota Domoni
[redacted]
[redacted]

My husband and I both work at NZKS. We rely on these jobs to feed and support our family of 5 children.
I support the relocation of the 6 farms as this will be better for the environment and the quality of our salmon. Salmon has lots of health benefits and if the quality is good customers will buy it and we will have lots of jobs for everyone.

Signed Rota Rabuka-Domoni
R Domoni 15/2/17.

Written Comment No: 0049

I totally support the moving of the farm which means that we have job security and also more opportunities

A.P.I. Dawson

[redacted]

Relocation of farms in the Malborough Sounds.

Written Comments No: 0365

Subject	**Alice Doole comments on Salmon farm relocation proposal**
From	Alice Doole
To	aquaculture submissions
Sent	Friday, 24 March 2017 10:39 AM
Attachments	<<Alice.doole.Potential Relocation of Salmon Farms in the Marlborough Sounds.docx>>

Sent from my iPad

Written Comments No: 0365

Potential Relocation of Salmon Farms in the Marlborough Sounds

COMMENTS FORM

Comments closes 5pm, 27 March, 2017

Your details

NAME: Alice Doole

POSTAL ADDRESS: [redacted] Blenheim 7273

EMAIL: [redacted]

DAYTIME PHONE: [redacted]

MOBILE: [redacted]

NO I do not want to speak to my comments at a public hearing

Comments sent to: aquaculture.submissions@mpi.govt.nz

DATE: 24 March 2017

I OPPOSE the relocation proposal for the following reasons:

Issue	Comment
1. Process	• The use of Section 360A of the RMA gives the Minister of Aquaculture the power to over-ride the Marlborough Sounds Resource Management Plan. • It takes decision-making and resource management away from the Marlborough District Council and local community. • It disregards the 2013 Board of Inquiry [BOI] and 2014 Supreme Court decisions about expansion of salmon farming into prohibited areas of the Marlborough Sounds. • The proposal provides commercial benefit for one company, using public water space for free, above the interests of other users of the Marlborough Sounds, including iwi. • It sets a precedent for the Minister to make similar water-grabs around New Zealand, usurping the power of local authorities and wishes of local communities.
2. Precautionary approach	• Policy 3 of the NZ Coastal Policy Statement calls for a precautionary approach. This was reinforced by the BOI decision [par 179]. • The three new high flow sites granted by the BOI are only just coming on stream. It would be precautionary to wait until monitoring shows the company can operate these sites, along with their other high-flow sites, to comply with the Benthic Guidelines at maximum feed levels for at least three years before any more space is considered. [consistent with BOI Condition of Consent 44a] • This especially applies to Tio Point, which would be the fourth salmon farm in close proximity in Tory Channel. • In the meantime reduce the feed and stocking rates at the low flow sites to meet the Benthic Guidelines.
3. Nitrogen pollution	• We dispute the accuracy of Minister's statement: "This proposal is about making better use of

	existing aquaculture space. There is no proposed increase in the total surface structure area used for salmon farming in the Marlborough Sounds," – Nathan Guy, Minister of Aquaculture. • The proposed relocation sites are not "existing aquaculture space". They are **prohibited** to aquaculture. • While farm surface area may remain about the same, there is a proposed five-fold increase in fish feed to 24,600T a year. • With more feed and more fish, the amount of nitrogen pollution discharged into the Sounds through salmon faeces would also increase. The high-flow farms would be discharging the equivalent of the nitrogen in sewage from a city the size of Christchurch, straight into the sea.[1] • Residents must meet strict obligations to keep waste out of the enclosed waters of the Sounds. Yet this proposal would allow the untreated discharge of polluting nutrients from six new salmon farms. • As a land-based comparison of low flow and high flow sites, it is not OK for a dairy farmer who has been pulled up for discharging effluent into a small stream to resolve the issue by increasing his herd and discharging to a faster river.
4. Offshore Alternatives	• The NZKS Supreme Court decision ruled there was an obligation to consider alternatives under the NZ Coastal Policy Statement and Section 32 of the RMA. **"Particularly where the applicant for a plan change is seeking exclusive use of a public resource for private gain."** [SC 172-173] • Having salmon farms offshore (open ocean aquaculture) rather than in the confines of the Marlborough Sounds would dilute the pollution and remove the conflict with other users. This approach is being used in countries such as Norway. • Offshore alternatives are barely mentioned in this proposal. NZKS claims it would be achievable in 10 years but was too expensive and not yet proven.

[1] BOI [par 379] Nitrogen equivalent calculations

	There is no information about what is happening in other countries and no cost-benefit analysis about off-shore alternatives. • Rather than pushing this relocation proposal for areas prohibited to aquaculture, MPI and the industry should invest in research to expedite offshore farming as a future-proofed alternative.
5. King shag	• Policy 11 of the NZ Coastal Policy Statement calls for protection of indigenous species in the coastal environment. • The NZ King Shag is classified as nationally endangered and is found only in the Marlborough Sounds. It is a taonga for Ngati Kuia and Ngati Koata. • King Shag are sensitive to disturbance when breeding, roosting and feeding. Duffers Reef to the Waitata Reach, where five new farms are proposed, are key areas for these activities. • The threat to King Shag was a factor in the BOI restricting the number of new farms in the Waitata Reach to two in its 2013 decision [BOI 1252]. Yet this latest proposal is seeking another five farms in the King Shag foraging area.
6. Landscape and Cumulative effects	• This proposal will degrade the Outstanding Natural Landscapes and High Natural Character values of the Waitata Reach. [2] • The Board of Inquiry decision identified the threshold number of salmon farms for Waitata Reach as TWO – Waitata and Richmond – and turned down three others because of the cumulative effects on Landscape, Natural Character, King shag feeding and Tangata Whenua values. [BOI 1252] • NZKS and MPI have ignored this ruling, which was arrived at after a long and considered judicial process. Instead they have joined forces and put forward this relocation proposal for FIVE more farms in the Waitata Reach. None of these farms can be justified.

[2] Marlborough Landscape Study August 2015 by Boffa Miskell and Marlborough District Council, page 108; Natural Character of the Marlborough Coast, Defining and Mapping the Marlborough Coastal Environment, June 2014 by MDC, Boffa Miskell, DOC, Landcare Research and Lucas Associates, page 75.

Further comment:

I feel strongly that the Marlborough District Council and local people are being sidelined by central Government's push for economic development at the expense of the environment and democratic process.

It is time to pull back on industrial development in the Sounds and leave what's left for locals and visitors to enjoy in its more-or-less natural state.

Desired outcome: Option C: The Minister does not recommend the proposed regulations.

Written Comment No: 0499

Subject	**Thanks for considering my submission**
From	Kerry Doole
To	aquaculture submissions
Cc	Kerry Doole
Sent	Monday, 27 March 2017 2:16 a.m.

Potential Relocation of Salmon Farms in the Marlborough Sounds

COMMENTS FORM

Comments closes5pm, 27 March, 2017

Your details

NAME: Kerry Doole
ORGANISATION (if applicable):
CONTACT PERSON: Kerry Doole
POSTAL ADDRESS: [redacted], Toronto, ON M6G3K1, Canada
EMAIL: [redacted]
DAYTIME PHONE: [redacted]
MOBILE: as above

YES I would like to speak to my written comments at a public hearing
X- NO I do not want to speak to my comments at a public hearing

Comments sent to: aquaculture.submissions@mpi.govt.nz

DATE: March 26, 2017

I OPPOSE the relocation proposal for the following reasons:

Issue	Comment
1. Process	The use of Section 360A of the RMA gives the Minister of Aquaculture the power to over-ride the Marlborough Sounds Resource Management Plan.

	It takes decision-making and resource management away from the Marlborough District Council and local community. It disregards the 2013 Board of Inquiry [BOI] and 2014 Supreme Court decisions about expansion of salmon farming into prohibited areas of the Marlborough Sounds. The proposal provides commercial benefit for one company, using public water space for free, above the interests of other users of the Marlborough Sounds, including iwi. It sets a precedent for the Minister to make similar water-grabs around New Zealand, usurping the power of local authorities and wishes of local communities.
2. Precautionary approach	Policy 3 of the NZ Coastal Policy Statement calls for a precautionary approach. This was reinforced by the BOI decision [par 179]. The three new high flow sites granted by the BOI are only just coming on stream. It would be precautionary to wait until monitoring shows the company can operate these sites, along with their other high-flow sites, to comply with the Benthic Guidelines at maximum feed levels for at least three years before any more space is considered. [consistent with BOI Condition of Consent 44a] This especially applies to Tio Point, which would be the fourth salmon farm in close proximity in Tory Channel. In the meantime reduce the feed and stocking rates at the low flow sites to meet the Benthic Guidelines.
3. Nitrogen pollution	We dispute the accuracy of Minister's statement: "This proposal is about making better use of existing aquaculture space. There is no proposed increase in the total surface structure area used for salmon farming in the Marlborough Sounds," – Nathan Guy, Minister of Aquaculture. The proposed relocation sites are not "existing aquaculture space". They are **prohibited** to aquaculture. While farm surface area may remain about the same, there is a proposed five-fold increase in fish feed to 24,600T a year. With more feed and more fish, the amount of nitrogen pollution discharged into the Sounds through salmon faeces would also increase. The high-flow farms would be discharging the equivalent of the nitrogen in sewage from a city the size of Christchurch, straight into the sea.[1]

	Residents must meet strict obligations to keep waste out of the enclosed waters of the Sounds. Yet this proposal would allow the untreated discharge of polluting nutrients from six new salmon farms. As a land-based comparison of low flow and high flow sites, it is not OK for a dairy farmer who has been pulled up for discharging effluent into a small stream to resolve the issue by increasing his herd and discharging to a faster river.
4. Offshore Alternatives	The NZKS Supreme Court decision ruled there was an obligation to consider alternatives under the NZ Coastal Policy Statement and Section 32 of the RMA. **"Particularly where the applicant for a plan change is seeking exclusive use of a public resource for private gain."** [SC 172-173] Having salmon farms offshore (open ocean aquaculture) rather than in the confines of the Marlborough Sounds would dilute the pollution and remove the conflict with other users. This approach is being used in countries such as Norway. Offshore alternatives are barely mentioned in this proposal. NZKS claims it would be achievable in 10 years but was too expensive and not yet proven. There is no information about what is happening in other countries and no cost-benefit analysis about off-shore alternatives. Rather than pushing this relocation proposal for areas prohibited to aquaculture, MPI and the industry should invest in research to expedite offshore farming as a future-proofed alternative.
5. King shag	Policy 11 of the NZ Coastal Policy Statement calls for protection of indigenous species in the coastal environment. The NZ King Shag is classified as nationally endangered and is found only in the Marlborough Sounds. It is a taonga for Ngati Kuia and Ngati Koata. King Shag are sensitive to disturbance when breeding, roosting and feeding. Duffers Reef to the Waitata Reach, where five new farms are proposed, are key areas for these activities. The threat to King Shag was a factor in the BOI restricting the number of new farms in the Waitata Reach to two in its 2013 decision [BOI 1252]. Yet this latest proposal is seeking another five farms in the King Shag foraging area.
6. Landscape and Cumulative effects	This proposal will degrade the Outstanding Natural Landscapes and High Natural Character values of the Waitata Reach. [2] The Board of Inquiry decision identified the threshold number of salmon farms for Waitata Reach as TWO – Waitata and Richmond – and turned

	down three others because of the cumulative effects on Landscape, Natural Character, King shag feeding and Tangata Whenua values. [BOI 1252] NZKS and MPI have ignored this ruling, which was arrived at after a long and considered judicial process. Instead they have joined forces and put forward this relocation proposal for FIVE more farms in the Waitata Reach. None of these farms can be justified.

Further comment: I was born and raised in Marlborough Sounds region. I have kept myself informed on the issue of salmon farming there and have been very concerned with developments. This area is a jewel that needs to be closely monitored and protected. I believe strongly that there should be a moratorium on salmon farms there.

In conclusion:
There should be no more salmon farms in the Marlborough Sounds until NZ King Salmon shows it can operate the ones it has within the agreed benthic guidelines.
Desired outcome: Option C: The Minister does not recommend the proposed regulations.

[1] BOI [par 379]Nitrogen equivalent calculations
[2] Marlborough Landscape Study August 2015 by Boffa Miskell and Marlborough District Council, page 108; Natural Character of the Marlborough Coast, Defining and Mapping the Marlborough Coastal Environment, June 2014 by MDC, Boffa Miskell, DOC, Landcare Research and Lucas Associates, page 75.

Subject	**Re: Automatic reply: Thanks for considering my submission**
From	Kerry Doole
To	aquaculture submissions
Sent	Monday, 27 March 2017 2:28 a.m.

Thank you for your response.
I will not be able to speak at the hearing.
Sincerely
Kerry Doole

On Sunday, March 26, 2017 9:17 AM, aquaculture submissions <aquaculture.submissions@mpi.govt.nz> wrote:

Thank-you, your email has been received by aquaculture submissions.

Written Comment No: 0499

Please note that all written comments received on the proposal will be published on the MPI website at the end of March/early April.

Also, please inform us if you wish to speak to your written comments with the independent hearing panel. Hearings are expected to be running from mid-April to mid-May in Blenheim, and those who have indicated they wish to speak will be advised of the timetable.

Written Comment No: 0429

Subject	**DOSAQUA Supplier support submission for Salmon Farm Relocation 250317**
From	Dos O'Sullivan
To	aquaculture submissions
Sent	Saturday, 25 March 2017 3:52 p.m.
Attachments	<<DOSAQUA Supplier support submission for Salmon Farm Relocation 250317.docx>>

Hi, thanks for the opportunity to have some input as a supplier of services to NZKS and other NZ aquaculture companies.

I would be happy to provide other information if requested,

Cheers Dos (David) O'Sullivan

[redacted]

Contract Third Party auditing of Environmental Systems (ISO 14001, EMAS, Ecomapping), Food Safety (ISO22000/HACCP), Quality (ISO 9001, including transitions to 2015) and WHS/OH&S (AS4801/OHSAS 18001) as well as Global GAP (GFSI standard recognised), FeedSafe & SafeFeed (both stock feed standards), MSC Chain of Custody, Aquaculture Stewardship Council, UTZ and GAA BAP (GFSI standard recognised) for hatcheries, farms and processing plants.

I audit for the Department of Health & Human Services against the Victorian *Food Act 1984* - High Risk Auditor in the National Food Safety Auditor (NFSA) – Level 4, ID #ADF/14/2529, expiry 30/04/18..

Management System Services:

- **Establishment, implementation or improvement of Business Management Systems including effective internal audits, inspections and reviews.**
- **Training of auditors (Exemplar Global/RABQSA certified), or other workplace training (TAE40110 CIV WorkPlace Training & Assessment).**
- **Selection and compliance to the best national / international certification program for you, your operation/business or your industry.**

Written Comment No: 0429

Salmon Farm Relocation

Ministry for Primary Industries

Private Bag 14

Port Nelson

aquaculture.submissions@mpi.govt.nz

To: The Salmon Relocation Advisory Panel

Introduction

. I am based in Melbourne, Victoria. I provide third party auditing services for marine and freshwater salmon farms in Australia and New Zealand (I have also audited salmon farms in Chile). These are audited against the Best Aquaculture Practices Salmon Standard Issue 2 Revision 3 October 2016 (https://www.bapcertification.org/bap-standards/); certification also includes hatcheries and processing plants. I currently work for three international Certifying Bodies for BAP, I have audited Salmon farms/hatcheries/plants for two of these. I also work for another certifying body associated with the Aquaculture Stewardship Council standard (Salmon farming standard), and another for GlobalGAP Certification of two aquaculture feed manufacturers in Australia (Compound Feed Manufacture Standard).

I support appropriate site selection for any aquaculture facility. Environmentally, adopting the Best Management Practice guidelines that as agreed by the Council and community is the future for aquaculture globally.

Thus, I support the potential salmon relocation process being proposed by MPI because I have been told that 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 health and growth/survivability performance will improve. It will also have a lower level of effect on the seabed which will have positive environmental benefits.

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.

What will this mean for me as a partner of King Salmon?

Better located farms will mean more efficient fish production and less environmental harm, these are key to the BAP Standards and other aquaculture sustainability standards. Having a strong and trusted relationship with the local community is also important. Thus, your relocation proposal sounds like excellent management practice. I would support similar move for any aquaculture facility.

Written Comment No: 0429

Effect on my business: A more productive, more profitable salmon industry will mean more work for me and other auditors and certifying bodies, as well as for the support industries such as feed, transport, trades, equipment manufacture, etc. A larger, more sustainable industry will also mean more long term direct/local and indirect jobs.

I am happy to provide any further information requested by the hearings panel.

Name: DAVID O'SULLIVAN

Date: 25/03/17

[redacted]Cheltenham, Vic 3192

Written Comment No: 0095

Potential relocation of salmon farms in the Marlborough Sounds.

Melemakole Douthett
[redacted]
Nelson

I support the relocation of the farms to better locations for the general health of the salmon. And it will be better for the environment. The health of the farms provides me with a job and I would like to keep this job. To work we need healthy fish and lots of it.

Signed M. Douthett 15-2-17

Written Comments No: 0351

Subject	**Salmon Farm Relocation**
From	Jocelyn Douthett
To	aquaculture submissions
Sent	Friday, 24 March 2017 6:59 a.m.
Attachments	<<SubmissionFarm Relocations.docx>>

--

Jocelyn Douthett, Processing Administrator
M [redacted]

New Zealand King Salmon

M: [redacted] | **W:** www.kingsalmon.co.nz | **A:** 93 Beatty Street, Tahunanui, 7011

REGAL

ŌRA KING

Written Comments No: 0351

Salmon Farm Relocation

Ministry for Primary Industries

Private Bag 14

Port Nelson

aquaculture.submissions@mpi.govt.nz

To: The Salmon Relocation Advisory Panel

Jocelyn Douthett/New Zealand King Salmon/Processing Administrator

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 amenities which is also a good thing.

Regards

J m Douthett

Written Comments No: 0403

Subject	**Potential relocation of salmon farm in the Marlborough Sounds**
From	Tony Downing
To	aquaculture.submissions@mpi.govt.nz
Sent	Monday, 27 March 2017 4:58 PM

I am writing to voice my support to the proposed relocation of salmon farms in the Marlborough Sounds.
My marketing and design business has been based in Nelson for the past 23 years. Over that time I have been able to employ a team of 6 to 8 design and marketing professionals here in Nelson. One of the main reasons we are able to do this is due to large companies like New Zealand King Salmon. New Zealand King Salmon have chosen to use local suppliers for many of their professional services, this includes our business. Their ongoing support has enabled me to pay salaries that are competitive with those paid in the main centres. Their brand profile makes them a prestigious company to work with. When we look to recruit new staff from outside of the region having New Zealand King Salmon as a client makes working here very attractive.
Going beyond personal business reasons, I support the salmon farm relocation because I have seen first hand how they go about farming salmon. I can affirm that New Zealand King Salmon is a company of integrity and honesty, who care deeply for the environment and sustainability. Through every level of the company, I have personally seen a deep desire to farm salmon in the most non-intrusive ways possible.
I believe that this move should go ahead for the sake of our community and the future of sustainable farming.
I am willing to be contacted for any further comments.

Your sincerely

Tony Downing
Downing
CREATIVE MARKETING

Downing Design Ltd Tel: [redacted]
1st Floor, Fields Building, 232 Hardy Street, Nelson • PO Box 698 Nelson 7040, New Zealand
www.downing.nz

Written Comments No: 0327

Subject	**Submission Anna and Brent Dowson**
From	Brent Dowson
To	aquaculture submissions
Sent	Monday, 27 March 2017 2:21 PM
Attachments	<<Dowsons Scanner_20170327_134428.pdf>>

Please find attached a Submission from Anna and Brent Dowson opposing the potential relocation of Salmon Farms in the Marlborough Sounds.

Regards

Brent Dowson

From: Fax
Sent: Monday, 27 March 2017 1:44 p.m.
To: Brent Dowson
[redacted]

Potential Relocation of Salmon Farms in the Marlborough Sounds

COMMENTS FORM

Comments closes 5pm, 27 March, 2017

Your details

NAME: Anna & Brent Dowson
ORGANISATION (if applicable):
CONTACT PERSON: Brent Dowson [redacted] Christchurch 8081
POSTAL ADDRESS: [redacted]
EMAIL: [redacted]
DAYTIME PHONE: —
MOBILE: 027 41444 54

YES I would like to speak to my written comments at a public hearing
NO I do not want to speak to my comments at a public hearing

Comments sent to: aquaculture.submissions@mpi.govt.nz

DATE: 27/3/2017

I OPPOSE the relocation proposal for the following reasons:

Issue	Comment
1. Process	• The use of Section 360A of the RMA gives the Minister of Aquaculture the power to over-ride the Marlborough Sounds Resource Management Plan. • It takes decision-making and resource management away from the Marlborough District Council and local

	community. • It disregards the 2013 Board of Inquiry [BOI] and 2014 Supreme Court decisions about expansion of salmon farming into prohibited areas of the Marlborough Sounds. • The proposal provides commercial benefit for one company, using public water space for free, above the interests of other users of the Marlborough Sounds, including iwi. • It sets a precedent for the Minister to make similar water-grabs around New Zealand, usurping the power of local authorities and wishes of local communities.
2. Precautionary approach	• Policy 3 of the NZ Coastal Policy Statement calls for a precautionary approach. This was reinforced by the BOI decision [par 179]. • The three new high flow sites granted by the BOI are only just coming on stream. It would be precautionary to wait until monitoring shows the company can operate these sites, along with their other high-flow sites, to comply with the Benthic Guidelines at maximum feed levels for at least three years before any more space is considered. [consistent with BOI Condition of Consent 44a] • This especially applies to Tio Point, which would be the fourth salmon farm in close proximity in Tory Channel. • In the meantime reduce the feed and stocking rates at the low flow sites to meet the Benthic Guidelines.
3. Nitrogen pollution	• We dispute the accuracy of Minister's statement: "This proposal is about making better use of existing aquaculture space. There is no proposed increase in the total surface structure area used for salmon farming in the Marlborough Sounds," – Nathan Guy, Minister of Aquaculture.

	• The proposed relocation sites are not "existing aquaculture space". They are **prohibited** to aquaculture. • While farm surface area may remain about the same, there is a proposed five-fold increase in fish feed to 24,600T a year. • With more feed and more fish, the amount of nitrogen pollution discharged into the Sounds through salmon faeces would also increase. The high-flow farms would be discharging the equivalent of the nitrogen in sewage from a city the size of Christchurch, straight into the sea.[1] • Residents must meet strict obligations to keep waste out of the enclosed waters of the Sounds. Yet this proposal would allow the untreated discharge of polluting nutrients from six new salmon farms. • As a land-based comparison of low flow and high flow sites, it is not OK for a dairy farmer who has been pulled up for discharging effluent into a small stream to resolve the issue by increasing his herd and discharging to a faster river.
4. Offshore Alternatives	• The NZKS Supreme Court decision ruled there was an obligation to consider alternatives under the NZ Coastal Policy Statement and Section 32 of the RMA. **"Particularly where the applicant for a plan change is seeking exclusive use of a public resource for private gain."** [SC 172-173] • Having salmon farms offshore (open ocean aquaculture) rather than in the confines of the Marlborough Sounds would dilute the pollution and remove the conflict with other users. This approach is being used in countries such as Norway. • Offshore alternatives are barely mentioned in this proposal. NZKS claims

1 BOI [par 379] Nitrogen equivalent calculations

	it would be achievable in 10 years but was too expensive and not yet proven. There is no information about what is happening in other countries and no cost-benefit analysis about off-shore alternatives. • Rather than pushing this relocation proposal for areas prohibited to aquaculture, MPI and the industry should invest in research to expedite offshore farming as a future-proofed alternative.
5. King shag	• Policy 11 of the NZ Coastal Policy Statement calls for protection of indigenous species in the coastal environment. • The NZ King Shag is classified as nationally endangered and is found only in the Marlborough Sounds. It is a taonga for Ngati Kuia and Ngati Koata. • King Shag are sensitive to disturbance when breeding, roosting and feeding. Duffers Reef to the Waitata Reach, where five new farms are proposed, are key areas for these activities. • The threat to King Shag was a factor in the BOI restricting the number of new farms in the Waitata Reach to two in its 2013 decision [BOI 1252]. Yet this latest proposal is seeking another five farms in the King Shag foraging area.
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2 Marlborough Landscape Study August 2015 by Boffa Miskell and Marlborough District Council, page 108; Natural Character of the Marlborough Coast, Defining and Mapping the Marlborough Coastal Environment, June 2014 by MDC, Boffa Miskell, DOC, Landcare Research and Lucas Associates, page 75.

	values. [BOI 1252] • NZKS and MPI have ignored this ruling, which was arrived at after a long and considered judicial process. Instead they have joined forces and put forward this relocation proposal for FIVE more farms in the Waitata Reach. None of these farms can be justified.

Further comment:

In conclusion:
There should be no discussion of more salmon farms in the Marlborough Sounds until NZ King Salmon shows it can operate the ones it has within the agreed benthic guidelines.

Desired outcome: Option C: The Minister does not recommend the proposed regulations.

In addition to the detrimental effects of the farms listed in this submission, we believe that further farms in the Tory Channel area increases the risk of navigational hazard even further than it currently is. Tory Channel is the second most tidal place in the country and also the main navigational channel for the Interisland and Bluebridge ferries. Adding structures into the channel that could (and have in the past) break free and inhibit the ferry's path in a very narrow channel puts lives at risk. We further add that in previous submissions NZKS have made on this issue the calculation they have used to estimate the tidal flow at the anchor points of the farm have been on the landward side of the farm - not in the main channel. It will only take a once-in-a decade weather event to really test these farms and we don't want to see those lives risked.

Written Comments No: 0330

Subject	**FW: Scanned image from Dowsons Shoes Ltd**
From	Brent Dowson
To	aquaculture submissions
Sent	Monday, 27 March 2017 2:13 PM
Attachments	<<Dowsons Scanner_20170327_133057.pdf>>

Please find attached a submission opposing the Relocation of the Salmon Farms in the Marlborough Sounds on behalf of my Father Mark Dowson who wishes his comments to be added to the list.

Regards

Brent Dowson

From: Fax
Sent: Monday, 27 March 2017 1:31 p.m.
To: Brent Dowson
Subject: [redacted]

Potential Relocation of Salmon Farms in the Marlborough Sounds

COMMENTS FORM

Comments closes 5pm, 27 March, 2017

Your details

NAME: Mark Dowson
ORGANISATION (if applicable):
CONTACT PERSON: as above
POSTAL ADDRESS: [redacted] Nelson
EMAIL: [redacted]
DAYTIME PHONE:
MOBILE: [redacted]

YES I would like to speak to my written comments at a public hearing
NO I do not want to speak to my comments at a public hearing

Comments sent to: aquaculture.submissions@mpi.govt.nz

DATE:

I OPPOSE the relocation proposal for the following reasons:

Issue	Comment
1. Process	• The use of Section 360A of the RMA gives the Minister of Aquaculture the power to over-ride the Marlborough Sounds Resource Management Plan. • It takes decision-making and resource management away from the Marlborough District Council and local

	community. • It disregards the 2013 Board of Inquiry [BOI] and 2014 Supreme Court decisions about expansion of salmon farming into prohibited areas of the Marlborough Sounds. • The proposal provides commercial benefit for one company, using public water space for free, above the interests of other users of the Marlborough Sounds, including iwi. • It sets a precedent for the Minister to make similar water-grabs around New Zealand, usurping the power of local authorities and wishes of local communities.
2. Precautionary approach	• Policy 3 of the NZ Coastal Policy Statement calls for a precautionary approach. This was reinforced by the BOI decision [par 179]. • The three new high flow sites granted by the BOI are only just coming on stream. It would be precautionary to wait until monitoring shows the company can operate these sites, along with their other high-flow sites, to comply with the Benthic Guidelines at maximum feed levels for at least three years before any more space is considered. [consistent with BOI Condition of Consent 44a] • This especially applies to Tio Point, which would be the fourth salmon farm in close proximity in Tory Channel. • In the meantime reduce the feed and stocking rates at the low flow sites to meet the Benthic Guidelines.
3. Nitrogen pollution	• We dispute the accuracy of Minister's statement: "This proposal is about making better use of existing aquaculture space. There is no proposed increase in the total surface structure area used for salmon farming in the Marlborough Sounds," – Nathan Guy, Minister of Aquaculture.

	• The proposed relocation sites are not "existing aquaculture space". They are **prohibited** to aquaculture. • While farm surface area may remain about the same, there is a proposed five-fold increase in fish feed to 24,600T a year. • With more feed and more fish, the amount of nitrogen pollution discharged into the Sounds through salmon faeces would also increase. The high-flow farms would be discharging the equivalent of the nitrogen in sewage from a city the size of Christchurch, straight into the sea.[1] • Residents must meet strict obligations to keep waste out of the enclosed waters of the Sounds. Yet this proposal would allow the untreated discharge of polluting nutrients from six new salmon farms. • As a land-based comparison of low flow and high flow sites, it is not OK for a dairy farmer who has been pulled up for discharging effluent into a small stream to resolve the issue by increasing his herd and discharging to a faster river.
4. Offshore Alternatives	• The NZKS Supreme Court decision ruled there was an obligation to consider alternatives under the NZ Coastal Policy Statement and Section 32 of the RMA. **"Particularly where the applicant for a plan change is seeking exclusive use of a public resource for private gain."** [SC 172-173] • Having salmon farms offshore (open ocean aquaculture) rather than in the confines of the Marlborough Sounds would dilute the pollution and remove the conflict with other users. This approach is being used in countries such as Norway. • Offshore alternatives are barely mentioned in this proposal. NZKS claims

1 BOI [par 379] Nitrogen equivalent calculations

	it would be achievable in 10 years but was too expensive and not yet proven. There is no information about what is happening in other countries and no cost-benefit analysis about off-shore alternatives. • Rather than pushing this relocation proposal for areas prohibited to aquaculture, MPI and the industry should invest in research to expedite offshore farming as a future-proofed alternative.
5. King shag	• Policy 11 of the NZ Coastal Policy Statement calls for protection of indigenous species in the coastal environment. • The NZ King Shag is classified as nationally endangered and is found only in the Marlborough Sounds. It is a taonga for Ngati Kuia and Ngati Koata. • King Shag are sensitive to disturbance when breeding, roosting and feeding. Duffers Reef to the Waitata Reach, where five new farms are proposed, are key areas for these activities. • The threat to King Shag was a factor in the BOI restricting the number of new farms in the Waitata Reach to two in its 2013 decision [BOI 1252]. Yet this latest proposal is seeking another five farms in the King Shag foraging area.
6. Landscape and Cumulative effects	• This proposal will degrade the Outstanding Natural Landscapes and High Natural Character values of the Waitata Reach. [2] • The Board of Inquiry decision identified the threshold number of salmon farms for Waitata Reach as TWO – Waitata and Richmond – and turned down three others because of the cumulative effects on Landscape, Natural Character, King shag feeding and Tangata Whenua

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	values. [BOI 1252] • NZKS and MPI have ignored this ruling, which was arrived at after a long and considered judicial process. Instead they have joined forces and put forward this relocation proposal for FIVE more farms in the Waitata Reach. None of these farms can be justified.

Further comment:

In conclusion:
There should be no discussion of more salmon farms in the Marlborough Sounds until NZ King Salmon shows it can operate the ones it has within the agreed benthic guidelines.

Desired outcome: Option C: The Minister does not recommend the proposed regulations.

3. NZKS is more than 50% owned by an offshore entity. Ultimately 50% of profits that it does make will not be enjoyed by New Zealanders.

Potential Relocation of Salmon Farms in the Marlborough Sounds

COMMENTS FORM

Comments closes 5pm, 27 March, 2017

Your details

NAME: Adam Donson
ORGANISATION (if applicable):
CONTACT PERSON: [redacted] [redacted] CHCH.
POSTAL ADDRESS: [redacted]
EMAIL: [redacted]
DAYTIME PHONE:
MOBILE: [redacted]

YES I would like to speak to my written comments at a public hearing
NO do not want to speak to my comments at a public hearing

Comments sent to: aquaculture.submissions@mpi.govt.nz

DATE: 27/3/17

I OPPOSE the relocation proposal for the following reasons:

Issue	Comment
1. Process	• The use of Section 360A of the RMA gives the Minister of Aquaculture the power to over-ride the Marlborough Sounds Resource Management Plan. • It takes decision-making and resource management away from the Marlborough District Council and local

	community. • It disregards the 2013 Board of Inquiry [BOI] and 2014 Supreme Court decisions about expansion of salmon farming into prohibited areas of the Marlborough Sounds. • The proposal provides commercial benefit for one company, using public water space for free, above the interests of other users of the Marlborough Sounds, including iwi. • It sets a precedent for the Minister to make similar water-grabs around New Zealand, usurping the power of local authorities and wishes of local communities.
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3. Nitrogen pollution	• We dispute the accuracy of Minister's statement: "This proposal is about making better use of existing aquaculture space. There is no proposed increase in the total surface structure area used for salmon farming in the Marlborough Sounds," – Nathan Guy, Minister of Aquaculture.

	• The proposed relocation sites are not "existing aquaculture space". They are **prohibited** to aquaculture. • While farm surface area may remain about the same, there is a proposed five-fold increase in fish feed to 24,600T a year. • With more feed and more fish, the amount of nitrogen pollution discharged into the Sounds through salmon faeces would also increase. The high-flow farms would be discharging the equivalent of the nitrogen in sewage from a city the size of Christchurch, straight into the sea.[1] • Residents must meet strict obligations to keep waste out of the enclosed waters of the Sounds. Yet this proposal would allow the untreated discharge of polluting nutrients from six new salmon farms. • As a land-based comparison of low flow and high flow sites, it is not OK for a dairy farmer who has been pulled up for discharging effluent into a small stream to resolve the issue by increasing his herd and discharging to a faster river.
4. Offshore Alternatives	• The NZKS Supreme Court decision ruled there was an obligation to consider alternatives under the NZ Coastal Policy Statement and Section 32 of the RMA. **"Particularly where the applicant for a plan change is seeking exclusive use of a public resource for private gain."** [SC 172-173] • Having salmon farms offshore (open ocean aquaculture) rather than in the confines of the Marlborough Sounds would dilute the pollution and remove the conflict with other users. This approach is being used in countries such as Norway. • Offshore alternatives are barely mentioned in this proposal. NZKS claims

1 BOI [par 379] Nitrogen equivalent calculations

	it would be achievable in 10 years but was too expensive and not yet proven. There is no information about what is happening in other countries and no cost-benefit analysis about off-shore alternatives. • Rather than pushing this relocation proposal for areas prohibited to aquaculture, MPI and the industry should invest in research to expedite offshore farming as a future-proofed alternative.
5. King shag	• Policy 11 of the NZ Coastal Policy Statement calls for protection of indigenous species in the coastal environment. • The NZ King Shag is classified as nationally endangered and is found only in the Marlborough Sounds. It is a taonga for Ngati Kuia and Ngati Koata. • King Shag are sensitive to disturbance when breeding, roosting and feeding. Duffers Reef to the Waitata Reach, where five new farms are proposed, are key areas for these activities. • The threat to King Shag was a factor in the BOI restricting the number of new farms in the Waitata Reach to two in its 2013 decision [BOI 1252]. Yet this latest proposal is seeking another five farms in the King Shag foraging area.
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	values. [BOI 1252] • NZKS and MPI have ignored this ruling, which was arrived at after a long and considered judicial process. Instead they have joined forces and put forward this relocation proposal for FIVE more farms in the Waitata Reach. None of these farms can be justified.

Further comment: See below

In conclusion:
There should be no discussion of more salmon farms in the Marlborough Sounds until NZ King Salmon shows it can operate the ones it has within the agreed benthic guidelines.

Desired outcome: Option C: The Minister does not recommend the proposed regulations.

COMMENT:

NZKS have failed to meet the conditions imposed on them by the BOI in 2013 and are ~~trying~~ yet to prove that they can! If the minister grants these further farms to them the minister will be making a sham of the law, the BOI decision & the district plan. In addition a number of people, ourselves included, have spent large amounts of time simply trying the existing law & district plan should be adhered to. To grant further farms completely undervalues that time which could have been spent of our own business which would bolster employment & economic conditions in the very regions you are considering.

Written Comment No: 0345

Subject	**Submission re potential relocation of the salmon farms in the Marlborough Sounds**
From	Knox Dowson
To	aquaculture submissions
Sent	Monday, 27 March 2017 1:00 p.m.
Attachments	<<Dowsons Scanner_20170327_114657.pdf>>

Hi

Please find attached my submission in regard to the potential relocation of the salmon farms in the Marlborough Sounds.

Knox Dowson

[redacted]

Written Comment No: 0345

Potential Relocation of Salmon Farms in the Marlborough Sounds

COMMENTS FORM

Comments closes 5pm, 27 March, 2017

Your details

NAME: Knox Dawson
ORGANISATION (if applicable):
CONTACT PERSON:
POSTAL ADDRESS: [redacted] Christchurch 8149
EMAIL: [redacted]
DAYTIME P[redacted]
MOBILE: [redacted]

YES I would like to speak to my written comments at a public hearing
~~**NO** I do not want to speak to my comments at a public hearing~~

Comments sent to: aquaculture.submissions@mpi.govt.nz

DATE: 27/March/2017

Further Comments on page 5

I OPPOSE the relocation proposal for the following reasons:

Issue	Comment
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	values. [BOI 1252] • NZKS and MPI have ignored this ruling, which was arrived at after a long and considered judicial process. Instead they have joined forces and put forward this relocation proposal for FIVE more farms in the Waitata Reach. None of these farms can be justified.

Further comment:

MPI must look more closely at the effects of the current farms and monitor the new ones already in high flow areas before allowing any more.

In conclusion:

There should be no discussion of more salmon farms in the Marlborough Sounds until NZ King Salmon shows it can operate the ones it has within the agreed benthic guidelines.

Desired outcome: Option C: The Minister does not recommend the proposed regulations.

Written Comment No: 0133

Subject	**Submissions RE: salmon farm relocation**
From	Kristin Spaetzel
To	aquaculture submissions
Sent	Tuesday, 28 February 2017 4:20 p.m.
Attachments	<<C.Wells.pdf>> <<D.Ray.pdf>> <<K.Boaz.pdf>> <<K.Duff.pdf>> <<K.Spaetzel.pdf>> <<M.Leary.pdf>> <<M.Wells.pdf>> <<N.Wells.pdf>> <<S.Guy.pdf>> <<S.Wells.pdf>>

Hi,
I am writing as I have collated a number of submissions from people I know and their friends and family. Each letter is the same, however each individual has signed and dated their own copy to show their support for the idea. I felt this was the easiest way to register the support of a large number of people who are in favor of the idea of moving the sea farms but who would be unlikely to take the time to compose their own personal letter. Hopefully this will even things out as I realize people in favor are less likely to put in a submission than those who are against. Each individual has read and stated that they agree fully with the written statement. If you wish to contact any individual or obtain contact information please don't hesitate to ask.
Thank you for your time.
Regards,
Kristin Spaetzel
BScH. Marine and Freshwater Biology

Written Comment No: 0133

To Whom It May Concern:

27-02-2017

I wish to add my support to the proposal made to relocate certain sea farms. I believe it will be beneficial to the fish being raised, the surrounding environment, the local community, and the economy.

Regards,

Kim Duff

Written Comments No: 0455

Subject	**Marlborough Sounds Salmon Relocation Comments**
From	Laurie Duncan
To	aquaculture submissions
Sent	Monday, 27 March 2017 4:52 p.m.
Attachments	<<Marlborough Sounds Salmon Relocation Comments.docx>>

Attached is my comments form for the Marlborough Sounds Salmon Relocation Proposal.
Kind Regards,
Laurie Duncan

Written Comments No: 0455

Marlborough Sounds Salmon Relocation

Comments Form

Details:

Name: Laurie Duncan (17), Environment Prefect and Marlborough Student

School: Marlborough Girls' College

Contact person: Laurie Duncan

Email: [redacted]

Mobile: [redacted]

No I do not want to speak my comments at a public hearing

Comments are sent to: aquaculture.submissions@mpi.govt.nz

Date: 26 March, 2017

I oppose the relocation proposal for the following reasons:

1. Background	I am a student of a high school local to the Marlborough Sounds. It is part of my local environment. I feel it is my responsibility that the local environment is cared for. As a Marlborough youth, I have invested interest in caring for the environment as we will be living in and with this environment for a longer time than the current decision makers. The youth of today are the dream chasers and world changers.
2. Benefits to only one group	This proposal benefits one company commercially. It allows this company to use public water space for free, which diminishes the resources available for tourism, recreational use and local iwi. This proposal provides no benefit for these three groups in return for their loss.
3. Waste obligations	Sounds residents have to comply with obligations to keep waste out of the waters in the Sounds. However this proposal would allow waste from the 6 new salmon farms to go untreated directly into the waters in the Sounds. Surely, the obligations residents are held under would apply equally to the salmon farms for the sake of the environment.
4. New Zealand King Shag	The New Zealand King Shag is classified as an endangered species and is found only in the Marlborough Sounds. It is sensitive to changes in the environment. Changes or disturbance of its environment can have a negative impact on its breeding, roosting and feeding.
5. Sustainability	The interest of the environment should be put ahead of the interests of commercial business. Long-term, without a sustainable environment, there will be no sustainable commercial business.

Desired Outcome:
The Minister does not recommend the proposed regulations.

Written Comment No: 0367

Subject	**Duncan Bay Resident's Association (DBRA) submission 2017/04**
From	Christine Tuffnell
To	aquaculture submissions
Sent	Friday, 24 March 2017 10:42 AM
Attachments	<<DBRA Marlborough Sounds salmon farms submission MPI March 2017.pdf>>

Submission for Duncan Bay Resident's Association attached as PDF.
Please acknowledge receipt by return email.
Thank you
Christine Tuffnell

Written Comment No: 0367

SUBMISSION ON NZ MINISTRY OF PRIMARY INDUSTRIES DISCUSSION PAPER NO: 2017/04:

POTENTIAL RELOCATION OF SALMON FARMS IN THE MARLBOROUGH SOUNDS

Submitter:
Duncan Bay Resident's Association
(DBRA)

March 2017

SUBMISSION ON NZ MINISTRY OF PRIMARY INDUSTRIES
DISCUSSION PAPER NO: 2017/04:
POTENTIAL RELOCATION OF SALMON FARMS IN THE MARLBOROUGH SOUNDS

Submitter: Duncan Bay Resident's Association
Address: [redacted]
Phone: (0

Duncan Bay Resident's Association (DBRA) represents land and dwelling owners in Duncan Bay, Tennyson Inlet, Pelorus Sounds. The community is made up of eighty dwellings. DBRA provides the water supply for these residents and is working to meet NZ Drinking Water Standards. They also provide green waste management, roadside maintenance, emergency systems eg. fire, medical, pest control – rats, wasps and work in association with Marlborough District Council, DOC, and Marlborough Roads. Most residents in Duncan Bay have boats, many of these on moorings in the bay, and are regular recreational users of the Pelorus Sounds area.

We would like to speak to our written comments at a public hearing

Q1. Do you think that up to six salmon farms within Marlborough Sounds should be allowed to relocate to higher-flow sites?

No. The first salmon farm in the Marlborough Sounds was in 1984. There has therefore been more than thirty years' experience of salmon farming in the Marlborough Sounds yet most of the current eleven salmon farms within the Marlborough Sounds do not meet the Benthic Standards.

Relocating the six salmon farms puts yet more areas of the Sounds at risk from damage to the environment and possibly our human food chain.
No farms should be moved and no further salmon farm consents issued until NZ King Salmon can demonstrate that its existing farms meet Benthic standards and until it has been scientifically proven that the waste from such farms does not endanger our human food chain. Internationally doubts have been raised about this.
See:

Kalantzi, I. et al (2013) Metals and other elements in tissues of wild fish from fish farms and comparison with farmed species in sites with oxic and anoxic sediments.
Food Chem.Nov 15;141(2):680-94

Pastorelli, A.A. et al (2012) Human exposure to lead, cadmium and mercury through fish and seafood product consumption in Italy: a pilot evaluation. Food Addit Contam Part A Chem Anal Control Expo Risk Assess.29(12):1913-21.

Birgisdottir, B.E. (2013) Essential and toxic element concentrations in blood and urine and their associations with diet: results from a Norwegian population study including high-consumers of seafood and game. Sci Total Environ. Oct 1;463-464:846-44.

Buscemi, S. et al (2014) Endothelial function and serum concentration of toxic metals in frequent consumers of fish. PLos One. Nov 17;9(11):e112478.doi:10.1371/journal.

Liu, J.L. et al. (2015) Heavy metals in wild marine fish from South China Sea: levels, tissue-and species-specific accumulation and potential risk to humans. Ecotoxicology. Oct 24(7-8):1583-92.

Lopez-Barrera, E.A.(2016) Metals and metalloid in eight fish species consumed by citizens of Bogota S.C, Colombia, and potential risk to humans. J Toxicol Environ Health A. 79(5):232-43.

What research has the NZ Ministry of Health undertaken to ensure that waste from marine farms in the Marlborough Sounds is not putting our human food chain at risk?

We need to start measuring for environmental contaminants in our native fish and marine creature population in the Marlborough Sounds and taking action to protect them not put them at higher risk of contamination by fish farms not meeting the required standards.

Q2. Which of the potential relocation sites do you think are suitable for salmon farming?

We have insufficient information to advise whether these sites provide suitable conditions for salmon farming.

The Consultation document 2017/04 acknowledges that water quality is affected by discharge of copper and zinc from salmon farm activities and that copper and zinc can enter the marine environment from uneaten fish food (zinc), and from fish faeces (zinc). The Cawthron Institute concludes that effects from copper and zinc are anticipated to be minor, if not negligible. We need an independent view on this given the Cawthron Institute's involvement in the aquacultural industry.

Obviously NZ King Salmon is looking for sites which give higher water flow to disperse the wastes - heavy metals – Hg, Zn, Cu, Cd, Fe, Mn, Co, Ni, Hb; organohalogenated contaminants – bromine, fluoride, choline, created by these farms.
Increased water flow and wider dispersal of contaminants makes it much easier for NZ King Salmon to meet environmental standards but still does not deal with the issue of preventing contamination in the first place, nor of the cumulative effect of what may be made to seem small amounts of contamination.
See:
Yung et al (2015) Ecotoxicity of Zinc Oxide Nanoparticles in the Marine Environment. Encyclopedia of Nanotechnology. Springer Publishing. Netherlands.

Cawthron Institute Report No 1805 July 2010: Ecological Relevance of Copper (Cu) and Zinc(Zn) in Sediments Beneath Fish Farms in New Zealand states:

* Monitoring results have shown a general rise in average copper levels within most operative farm sites since 2002.
* Average zinc levels under the same farm and reference sites have exceeded ISQG-Low and –High- trigger values.
* There is a high correlation between the organic content in the sediments (AFDW) and copper and zinc concentrations.
* Simultaneous exposure of copper and zinc generally resulted in enhanced uptake of both metals by marine organisms."

The report also states:
"Once being released into the marine environment, ZnO-NPs are expected to have different

behaviors. In general, the nanoparticles can stay in suspensions as individual particles, dissolve in the seawater, aggregate and form larger particles and subsequent deposit on sediment, adsorb onto the constituents in marine waters (e.g., dissolved organic matter, DOM), and transform chemically based on reduction-oxidation (redox) reactions or transform biologically in the presence of biota (e.g., microorganisms) in the marine environment.

Potential uptake routes of ZnO-NPs in fish include ingestion from water or sediment for demersal species, via the gill or the gut epithelial cells or through the chorion pore channel by diffusion for embryos. Studies of toxicities of ZnO-NPs on marine fishes are scarce.

Based on our comprehensive review of relevant literature, we have identified several knowledge gaps which are needed to be filled for improving our current understanding on the ecotoxicity of ZnO-NPs for environmental risk assessment and management for this group of highly popular, commercialized nanoparticles.

1. Molecular toxic mechanisms to marine organisms should be thoroughly examined using advanced transcriptomic, proteomic, and metabolomic approaches in order to differentiate different modes of toxic action between the nanoparticles of ZnO-NPs and their associated dissolved zinc ions and between waterborne and dietary exposure.

2. Given that ZnO-NPs are highly photoactive, research focus should be laid on understanding the photo-induced toxicity under environmentally relevant UV radiation to an array of different marine species from different taxonomic groups. Tools and techniques should be developed to quantify the ROS released from ZnO-NPs and the intracellularly induced ROS in the environmental compartments and within the test marine organisms.

3. There are insufficient data on chronic effects of ZnO-NPs to marine organisms, and thus more chronic toxicity studies such as life-cycle studies are required to improve our understanding on the long-term and low-dose effect of these nanoparticles on selected marine species. Benthic organisms such as bivalves and polychaetes should be placed on a high priority as a subject of study, since ZnO-NPs have a high potential to aggregate and settle on the sediment in marine environment and bottom filter feeders and deposit feeders have a great potential to consume the nanoparticles associated with organic matter.

4. More toxicity data should be generated from marine fish species so as to reveal the sub-lethal toxic effects and associated toxic mechanisms of ZnO-NPs in this important group of higher-level organisms in the marine ecosystem.

5. Further ecotoxicological study of ZnO-NPs should also concentrate on bioaccumulation, cellular localization or tissue distribution, biotransformation, and trophic transfer of the nanoparticles in selected, typical marine food chains.

6. Combined effects of environmental stressors such as temperature, salinity, pH, UV radiation, and presence of DOM and combined toxic effects of ZnO-NPs and other pollutants to marine organisms should be investigated to better understand the behavior and toxicity of ZnO-NPs under environmentally realistic scenarios.
By filling up these knowledge gaps, our understanding on the ecotoxicology of ZnO-NPs in the marine environment could be significantly improved, while the information could also be used to derive environmental quality benchmarks such as water and sediment quality guidelines for regulating the use and release of ZnO-NPs, and hence offering better protection to marine ecosystems".

Written Comment No: 0367

Have these knowledge gaps been closed and the research done?

In the Consultation Document 2017/04 pp 53 states that "The Cawthron Institute concludes that the effects from copper and zinc are anticipated to be minor, if not negligible."
On what is this statement based?

Dean *et al.* (2007) assessed the level of cadmium in sediments under Scottish finfish cages, and found that 14% could be attributed to feed products. A British Columbian study indicated that mercury can also be locally elevated in the vicinity of fish farms, due in part to trace levels in uneaten feed and/or residual (*i.e.* naturally occurring) amounts in sediments (Debruyn *et al.* 2006).

What research has been undertaken in New Zealand to determine the extent to which cadmium, mercury, or other elemental compounds are elevated in the New Zealand environment due to fish farm activities?

Whether currents will spread the area of nutrient enriched water and detritus that might affect fish stocks is one uncertainty, especially with positioning farms in areas of greater current flow. (Graeme Taylor, Principal Science Advisor, Marine Species and Threats
Subject: Comments on the NIWA seabird reports assessing issues with relocation of salmon farms in Marlborough, 2016)

NIWA A Biophysical model for the Marlborough Sounds: Part 2: Pelorus Sound, June 2015: states:
"At the whole of Pelorus scale, the majority of the farm derived nitrogen is predicted to be lost through denitrification of the seabed of the Pelorus system rather than by export to Cook Strait."
Thus, the effects of salmon farm waste, even with improved water flow (the reason for moving the fish farms) will impact almost entirely on the marine ecosystems of the Sounds itself.

Q3. Which of the existing lower-flow sites should be relocated?

No farms should be moved and no further salmon farm consents issued until King Salmon can demonstrate that its existing farms meet Benthic standards and until it has been scientifically proven that the waste from such farms does not endanger our human food chain.

It is clear that the only current site which has a future in terms of time requirements before resting is Ruakaka Bay. Otanerau temperatures are too warm and adjacent mussel farms mean the marine environment is being depleted of nutrients and challenged by waste.
Forsythe Bay farm is currently fallow as is Waihinau – length of time required for fallow period is not stated in the MPI Consultation Document but research shows it needs to be a number of years – and possibly as much as 10 years.

Crail Bay has been destocked and it is stated it is not suitable for salmon farming despite being re-consented in 2014.

Is it not possible to detect whether an area is suitable for salmon farming without trial and error and damage to the environment through this process? *If salmon farmers do not know what conditions are needed for salmon farming then should we trust them with taking measures to protect the marine environment in the Marlborough Sounds?*

Q4. If you have concerns about particular sites, what are they and what could be done to address these concerns?

1 Blowhole Point North – Te Hoiere /Pelorus Sound

This site is located at the entrance to Pelorus Sound. It is north of Blowhole Point and is in an area of water depths between 28 and 80 metres over a mud and sand seabed. Over 80 percent of the sea pens at this site would be located in water greater than 50 metres deep.
The rocky coastal edge is a habitat for Blue Cod.
Three existing mussel farms occupy the coastal edge of the bay, and the sea pens would be located seawards of these. Adjacent mussel farms mean the marine environment is being depleted of nutrients and challenged by waste.

2 Blowhole Point South – Te Hoiere/Pelorus Sound

The site is located south of Blowhole Point and further into the entrance to Pelorus Sound compared with Blowhole Point North. Water depths at the site vary from 38 to 65 metres, and the seabed is sandy mud with some coarse shell material. Over 70 percent of the sea pens at this site would be located in water greater than 50 metres deep.
There is an existing mussel farm in the bay, and the sea pens would overlap with part of it. Adjacent mussel farms mean the marine environment is being depleted of nutrients and challenged by waste.
Presence of additional farms in this area would make it difficult for recreational boaters to navigate. They tend to cut in close to the coastline here in rough weather in making their way to Pelorus Sound entrance.

3 Waitata Mid-Channel – Te Hoiere/Pelorus Sound

The site is located in the middle of the channel between Waihinau Bay to the north-west and Post Office Point to the southeast. The site is not adjacent to any land and sits in the middle of a deep 12 kilometre-long channel. Apparently only sparse marine communities are present.

However the salmon farm structure could create a navigation danger, particularly at night, and given that such a danger will not be shown on maritime charts.

4 Richmond Bay South – Te Hoiere/Pelorus Sound

This site is located adjacent to the headland between Richmond Bay and Horseshoe Bay. It is located over a sloping muddy seabed between 30 and 56 metres deep.

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This is Blue Cod habitat and neighbors the wildlife sanctuary on Maude Island and the large protected marine no fishing area which surrounds it. What guarantees are there that salmon farms in this area will not negatively affect the marine life thriving in this reserve?

5 Horseshoe Bay – Te Hoiere/Pelorus Sound

This site is located on the northern side of Horseshoe Bay, and to the south of the potential Richmond Bay South site. It is located in water depths of 18 to 45 metres over a sandy mud seabed. The rocky coastal edge is Blue Cod habitat.

Horseshoe Bay has a number of mussel farms along the length of the bay, with one located in the northeastern section of the potential farm area. Adjacent mussel farms mean the marine environment is being depleted of nutrients and challenged by waste.
This site is also close to the marine reserve surrounding Maude Island.

6 Tio Point – Kura Te Au/Tory Channel

The site is located at the entrance to Oyster Bay within Tory Channel. Water depths at the site are 18 to 44 metres, with a seabed largely consisting of sand, mud and shell hash.
The land adjacent to the site comprises a rocky coastal edge which is a Blue Cod habitat.

All coastal and Marlborough Sounds sites should meet Benthic Standards, achieved by Waste Capture/Containment. This is attainable with current technology but it seems salmon monopolies are reluctant to invest in this in open water farming. If they cannot collect and control their farm waste we support moving to land-based farming eg. (LST or LFR).

Q5. Do you feel there are potential benefits or costs of relocating farms that have not been identified?

Yes. Financial costs have been clearly stated but information on potential damage to the environment has been minimized.

The report: Our Marine Environment 2016 released by the NZ Government Environmental Reporting Series makes it very clear that the full ecological effects of fishing and fish farming are not clear and that there is a lack of data.
In Australia, David Booth, Professor of Marine Ecology and Director of the Centre for Environmental Sustainability at UTS, makes the following statement regarding the salmon industry: "Their profit and loss ledger sheet doesn't include the cost for environment. If it did, maybe they wouldn't be making such a high profit. They're taking and not giving back."
(Source: Huff Post, Australia – Everything you should know about salmon farming.)

The Consultation Document (No:2017/04) advises that:
"Modelling and information suggests that infaunal communities will be affected at all of the potential sites, as a result of nutrients deposited onto the seabed from any salmon farming operation. Enrichment-tolerant species will become highly abundant, diversity will decrease, and there is the potential for some formation of bacterial mats and outgassing of hydrogen sulphide if sediments are disturbed.

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This intensity of effects is recognised by the Benthic Guidelines, and as required by the guidelines is predicted to be relatively confined (generally to very small areas underneath the sea pens) and effects would then decrease with distance.
NIWA notes that the infaunal species at each site are widespread and common in the soft sediment habitats of the Marlborough Sounds and effects are not considered to be significant in the context of the wider Sounds.

Modelling of the potential farm discharge effects has indicated appropriate feed levels that could be discharged from each potential farm to ensure that seabed enrichment does not exceed the standards within the Benthic Guidelines."

New Zealand has a Biodiversity Strategy (The New Zealand Biodiversity Strategy: Our Chance to Turn the Tide, Whakakohukihukitia Te Tai Roroku Ki Te Tai Oranga, February 2000, which includes aims for marine environments.
The impression is that this is our strategy when it suits us if we are prepared to accept decreased diversity for increased profits in the Marlborough Sounds as proposed by the Consultation Document 2017/04. This Consultation Document fails to understand or explore the ecosystems that may be affected by salmon farming and by salmon farming and mussel farming in close geographical proximity. Is there a risk of putting mussel farming at risk?

Q6. Are there rules, policies or conditions that you believe should be added? Please provide information to support any proposed new provisions.

How is it that one Minister (the Minister of Primary Industries) has the ability to single-handedly force changes to the Resource Management Act 1991, New Zealand Coastal Policy Statement, Marlborough Regional Policy Statement 1995, Marlborough Sounds Resource Management Plan 2003, and the proposed Marlborough Environment Plan, in the interests of commercial gain to the possible detriment of the environment?
Is he indeed similar to some other political figures who feel they need only to consult with themselves?

When the Deputy Chair of DBRA attended the briefing session run by staff of the Ministry of Primary Industries in Havelock on Tuesday 14th February she asked whether the Ministry of the Environment and DOC had had input into the Consultation Document 2017/04 and was assured they had.
If this is true, and these Government Departments we trust to protect our environment think the proposed relocation of salmon farms is acceptable, then the Marlborough Sounds is in real trouble. This proposal is contrary to New Zealand conservation and environmental policies.

When the Deputy Chair of DBRA attended the briefing session run by staff of the Ministry of Primary Industries in Havelock on Tuesday 14th February she asked: If copper based product is not now used to clean nets/cages – what is used? They did not know but undertook to ask NZ King Salmon.
The answer she received was:

NZ King Salmon has developed an automated net cleaner and uses off the shelf remotely controlled equipment which cleans the grower nets in the water (in-situ). These cleaners use high pressure water directed through rotating discs. The 'head' which contains the discs slides up and down the sides of the net and blasts off the fouling organisms. The cleaning heads of the remotely controlled machines are controlled using feedback gained from in-water cameras. Not only is the in situ cleaning much quicker, it also reduces farm noise by minimising the use of

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water blasting equipment. In situ net cleaning is carried out with fish in the net pen.- *as per page 31 of NZKS Operations Report* (available here: https://www.mpi.govt.nz/news-and-resources/consultations/marlborough-salmon-relocation/).

Has there been an independent assessment of the impact of this form of cleaning on the benthic environment? Are changes in work processes assessed independently for their effect on the marine environment before being implemented? If not, this should be a requirement of the standards.

Q7. Provided that detailed standards and requirements are met, do you agree that salmon farming on the potential relocation sites should be a restricted discretionary activity?

No farms should be moved and no further salmon farm consents issued until King Salmon can demonstrate that its existing farms meet Benthic standards and until it has been scientifically proven that the waste from such farms does not endanger our human food chain.

While water flow is a significant factor in meeting Benthic Standards, the Standards could be met by other means eg. waste capture/containment.

Q8. Do you agree that the overall surface structure area of salmon farms should not be increased?
Yes.

Q9. If the sites at the existing lower-flow farms (other than Crail Bay MFL32) are vacated, do you believe that marine farming should be prohibited in these sites or do you think that these sites should remain open to other types of marine farming for aquaculture settlement purposes?

We understand that vacated sites take 5-10 years or more to recover after salmon farming.

Q10. Given the multiple ownership at Crail Bay MFL32, if this site is relocated, should aquaculture be fully prohibited or should shellfish farming be allowed to continue?

In 2015 there were 575 mussel farms in the Marlborough Sounds. These farms deplete phytoplankton and zooplankton, modify the benthic environment, species assemblages, and local hydrodynamics, increase marine litter and facilitate the spread of unwanted organisms (Brian D. Lloyd (2003) Department of Conservation – Potential effects of mussel farming on New Zealand's marine mammals and sea birds). However, as far as we are aware, they do not produce the heavy metal and chemical waste characteristic of salmon farms. Over time the existing mussel farms are depleting the marine environment and may be negatively affecting our marine species. Again, there is a lack of data on which to make decisions whether further mussel farm permits should be issued. Has saturation point has been reached?

Q11. Do you agree with a staged adaptive management approach if salmon farming at the potential relocation sites proceeds?

Yes.

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Q 12. Is there any wording you agree or do not agree with in the proposed regulations?

We have some concerns about the Standards under Rule 35.3.3.1(b) as set out in Appendix D4 of the Consultation Document 2017/04.
Firstly, the Consultation Document does not contain an Appendix D7. Site plans are shown in Appendix D6.

Standard 37 of Standards under Rule 35.3.1(b) is unclear regarding corrective action process in the event of water quality standards not being complied with. It appears reporting is in-house and that corrective action is not reported externally. There is a delay in second level response – corrective action in favour of profit rather than environment – i.e. corrective action of reduced stocking on the marine farm following the next harvest of salmon on the marine farm. This is not acceptable.

Standard 38 of Standards under Rule 35.3.3.1(b) –(c) states – no obvious spontaneous out-gassing of hydrogen sulphide and methane in ZME.
This is a very subjective measure – what is or is not "obvious" could vary greatly from person to person and timely corrective action may not be taken.

Standard 42 of Standards under Rule 35.3.3.1(b) – it is encouraging to see that the person/s preparing the Baseline Plan and Base-line Report, the MEM-AMP and the Annual Report is to be independent.

Standard 46(h) and (i) of Standards under Rule 35.3.3.1(b) – monitoring of Copper and Zinc levels.
As this standard stands it could be more than 12 months before corrective action is taken – meantime potential damage is being done to wild marine life and ecosystems.

Standard 51 of Standards under Rule 35.3.3.1(b) – Peer Review.
The Peer Review Panel needs to be independent and void of conflicts of interests in relation to the aquaculture industry.

It is time the total impact of aquaculture/farming in the Marlborough Sounds is independently researched and action taken to protect species.
Cawthron Institute, formerly a private, independent scientific testing laboratory is now a firm partner in aquaculture product development and farming.
Peer review of research by people with possible conflict of interest is not acceptable. The research itself must be independent, including independent of Government departments.
This does not appear to be just a New Zealand problem, Airdrie et al (2015) in "Something is Fishy: Salmon Farming on the B,C. Coast", Department of Geography, Vancouver University notes: "It is the industry workers who provide scientific information to the DFO on which policies are created, possibly limiting the credibility of the data collection, as industry workers refrain from choosing research that would badly frame their farms."

Q13. Are there any particular issues at the existing lower-flow sites that you would like to comment on?

Biophysical modelling of Pelorus Sound by NIWA (June 2015) showed that movement of nutrients and tracers through Pelorus Sound is driven primarily by estuarine circulation. This results in a flow of approximately $5000 m_3 s^{-1}$ of brackish water at the surface out from Pelorus Sound into Cook Strait and a similar inflow of ocean water below.

What is being done to ensure the flow of Pelorus River and other rivers flowing into the Sounds is maximized to support good water flow rates in the Sounds itself?

Q14. Which of the existing lower-flow salmon farms in the Marlborough Sounds do you think are a higher priority to relocate and why?

It depends on how much damage they have done to the seabed and to nearby marine life and ecosystems. Where is the data to inform this decision?

Q15. Is there anything specific that you would like the Minister for Primary Industries to be aware of for any of these sites when thinking about the potential relocation proposal?

When the Deputy Chair of DBRA attended the briefing session run by staff of the Ministry of Primary Industries in Havelock on Tuesday 14th February she asked WHY NZ King Salmon was not meeting the Benthic Standards.
Their reply was:

"The BMP Benthic Guidelines set ES 5 as the acceptable level of effect under a marine farm.
Not all farms are unable to meet the ES5 standard. Those in areas experiencing higher flows are able to comply.

Some of the consented salmon farms are unable to meet this standard because the amount of waste landing on the seafloor exceeds the assimilative capacity. These farms are not in ideal environments (i.e. lower-flow and shallower) for salmon farming so the amount of feed discharged has to be reduced. Some farms would become uneconomic to farm if they adopted BMP."

Again, standards could be met by waste capture/containment. It will become necessary eventually so why not save the marine life in our Sounds now, rather than try to regenerate them later when they are damaged from aquaculture.

It is clear that internationally there is a shift towards non acceptance of the environmental damage caused by salmon farming in cages in open water.

In January 2017 the Institute for Marine and Antarctic Studies published a report of the environmental research in Macquarie Harbor, Tasmania. The study reveals that due to salmon farming in the harbor conditions in the harbor have dramatically deteriorated, with the amount of dissolved oxygen (DO) in the water plummeting to historic lows. The report found DO levels are now extremely low throughout the harbor, particularly in the bottom waters – all the independent data sets (industry, EPA, Sense-T, Parks, IMAS and CSIRO) are providing the same picture. There has been a significant decline in the total abundance and diversity of benthic infauna. In one particular lease (by a salmon farm) the data suggested that the sediments were virtually devoid of all fauna out to at least 500 metres from the cages. (Source: ABC's Four Corners – Mon 6 February 2017.)

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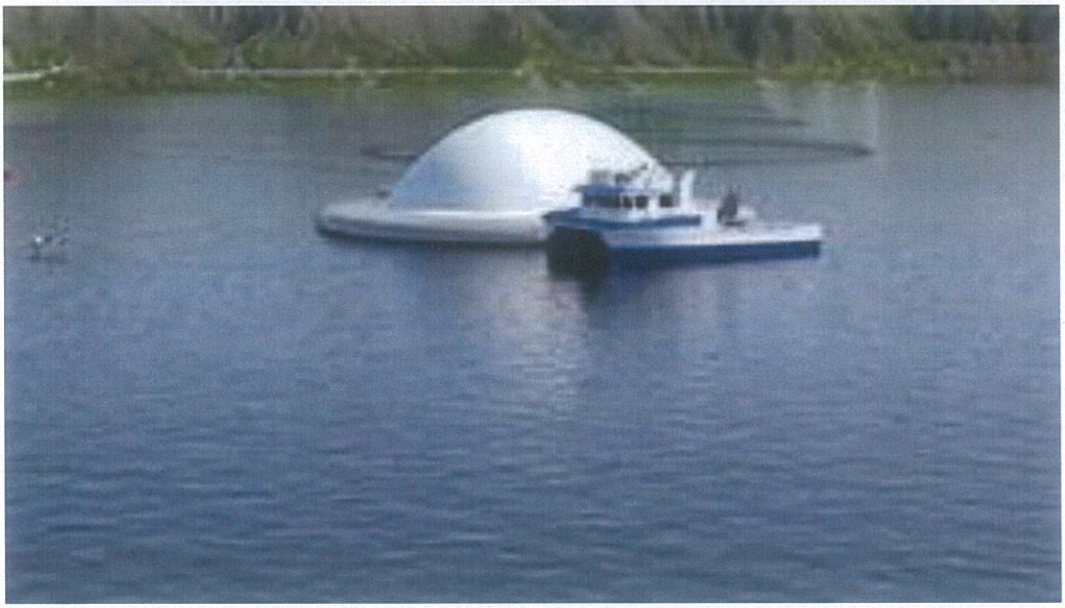
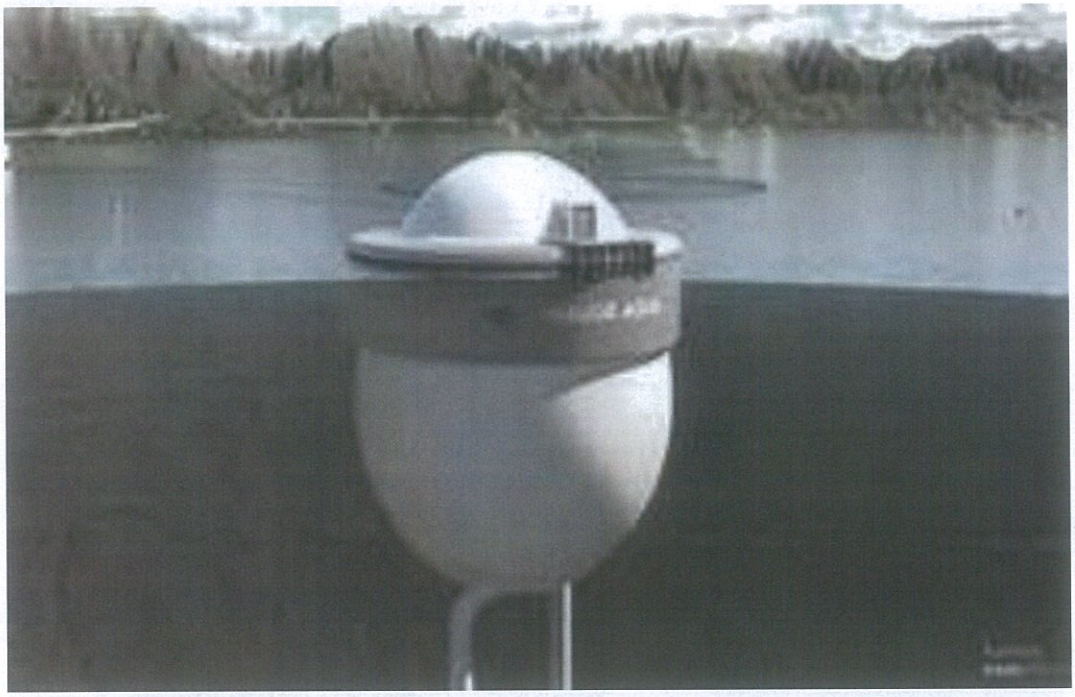
In Sweden the Supreme Environmental Court has banned fish farming in cages in open water via the Weser-Judgement from the European Union Court in combination with new Environmental Quality Norms in water in Sweden. A simpler, cost-effective and more sustainable way than conventional cage culture is being promoted.
(Source: North Atlantic Salmon Fund, 16 March 2017.)

In Denmark an innovative closed-containment salmon farming system has been in operation for over a year now – called "The Egg". "The Egg" is robust and aims to overcome biological and environmental challenges. It provides for further sustainable growth in the salmon farming industry while reducing the environmental footprint. (Source: Press Release Hauge Aqua/Marine Harvest February 11th 2016.)





Other Examples of Closed Systems

AgriMarine Holdings Inc.

AgriMarine Holdings Inc. is a Vancouver-based company currently growing salmon in closed containment in BC, and trout in China. A partnership between the Middle Bay Sustainable Aquaculture Institute and Agrimarine Inc. based in Campbell River BC is developing a floating tank facility to raise Pacific chinook salmon. One tank is currently stocked. Once complete, the four-tank floating system, situated in the Discovery Islands, is licensed to produce 1,200 metric tonnes of salmon per year. They are also in the process of developing operations in Norway.

Sweet Spring Salmon

Washington-based AquaSeed Corp. raises Pacific Coho salmon in a freshwater land-based closed containment facility under the SweetSpring label. This salmon is the first of its kind to receive a positive ranking from a prestigious sustainable seafood program. Monterey Bay Aquarium's Seafood Watch program issued a green "Best Choice" rating on their website for the salmon. This product is sold at the same price point as Atlantic net-cage salmon, yet without the environmental costs, at Overwaitea Food Group stores across BC and Alberta. Building on this success, AquaSeed Corp. is preparing to rapidly expand production and is already working with large purchasers such as Compass Group and Whole Foods.

Teton Fisheries LLC

Envirotech Ag Systems are growing Coho salmon in facilities similar to Sweetspring in two Montana Hutterite communities, supporting local economic stability. The small amount of effluent collected from the operation is used to fertilize vegetable farms in the community.

Swift Aquaculture

Swift Aquaculture is a land-based closed containment fish farming operation based in Agassiz BC. Swift Aquaculture raises eight to ten tonnes of coho salmon per year and uses waste water from the tanks to grow watercress and wasabi. The Coho salmon is available at high-end restaurants in Vancouver. The operation has been sold to Golden Eagle Aquaculture, which will build a new, 1000 MT operation to grow Atlantic Salmon in a land-based recirculating system.

The K'udas Closed Containment Project

The Namgis Nation, in partnership with Save our Salmon, are building a land-based recirculation facility to grow Atlantic Salmon on their land on northern Vancouver Island.

Langsand Laks

Langsand Laks operates 1000 MT Atlantic Salmon land-based recirculation system in construction in Denmark.

Atlantic Sapphire

Atlantic Sapphire, an affiliate of Langsand Laks, is in the planning stages of 3000 MT facility on the east coast of US www.atlanticsapphire.com

Marine Harvest Canada

Marine Harvest Canada has developed a plan for a 1000 MT land based recirculation facility to grow Atlantic Salmon on North Vancouver Island.

The Freshwater Institute, Conservation Fund

The Conservation Fund, an American non-profit, is a leader in research on closed-containment aquaculture systems. Based in Shepherdstown, West Virginia they have 20 years of experience developing closed-containment aquaculture systems to grow trout and perch at their Freshwater Institute. More recently they have also been growing Atlantic salmon to investigate the biological and economic feasibility of raising this fish to market size in freshwater recirculation systems. The Freshwater Institute's research is aimed at developing a sustainable, environmentally responsible, and economically viable aquaculture industry in the United States.

UBC – InSEAS Research

Conceptual Design of a 2500 MT CC system for Atlantic Salmon focused on finding the optimal conditions for fish rearing using joint funding opportunities.

Norwegian Institute of Food Fisheries and Aquaculture Research (NOFIMA)

NOFIMA is determining parameters for economic viability in a research facility funded by Norwegian government and industry.

Q16. Are there particular landscape or natural character values that you want to identify to the Minister for Primary Industries for any of the potential relocation sites?

Natural character will not matter much if the Sounds marine life is decimated through salmon farm waste.

In 2012 June Harney, a home owner in Duncan Bay, Tennyson Inlet presented an excellent submission (No 0616) to the EPA Inquiry appointed under Section 1491 of the Resource Management Act (1991) to consider resource consent applications made by NZ King Salmon Co Ltd at that time. She outlined the facts as to why the Marlborough Sounds are a globally unique geological landscape, including the unique mineral belt of the area.
She points out that the Marlborough Sounds is part of a tectonic block of New Zealand making it uniquely different from Fiordland and from other Sounds and fiords in other countries.
The Marlborough Sounds is indeed worthy of international protection as a world heritage site.

Q17. Are there other effects on landscape and natural character not outlined in the Hudson Associates or Drakeford Williams reports that you would like the Minister for Primary Industries to be aware of?

The NZILA seven point scale is largely subjective and based on opinion of the rater.
For example what is the numerical difference between Very High and High or Very Low and Low? The scale tries to create "science" where there is none.

The peer reviewer disagreed with some of the ratings demonstrating the point given on the scale is a matter of opinion. Opinion can be influenced by "interests".

The report conclusion was that "None of the sites are assessed as adversely affecting the key values that cause the Sounds to be outstanding at that national level due to the scale of the proposed farms in relation to the scale of the Sounds outstanding natural landscape".
Again, this is a matter of opinion. How big a blot on the landscape is acceptable?

The peer review report advises that the report does not take into account potential cumulative effects affecting landscape eg. other farms, netting type, colour. Barge design, colour, structure of farm eg. circular, square, compact or modular.

Q18. Are there any further measures that you believe could be taken to reduce effects at on landscape and natural character at the potential relocation sites?

How low can structures go? Standards 9-18 of the Standards under Rule 35.3.3.1(b) set out the requirements for structure. These should be adhered to.

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Q19. What are your thoughts on the potential water quality effects at the potential relocation sites?

Ocean acidification worldwide is expected to impact marine costal environments by altering the bioavailability and potential toxicity of many pH-sensitive metals. Copper, in particular, has been found to damage the DNA of mussels and sea urchins.We need to avoid escalating this problem by preventing copper discharge from aquacultural farming.
(Lewis, C et al. (2016) Ocean acidification increases copper toxicity differentially in two key marine invertebrates with distinct acid-base responses. Scientific Reports. Article No 21554.)

NZ Environmental Reporting Series 2016: Our Marine Environment also points to the top issue for marine environment management – Global greenhouse gas emissions causing acidification and warming and the danger of widespread harm to carbonate shelled creatures – in particular mussels, paua, and oysters.
Why relocate salmon farms, which are high risk to the marine environment, despite specification of standards, into an area not yet heavily polluted by salmon farming and put the significant number of mussel farms at additional risk, when it is uncertain just how harmful ocean acidification and warming are going to be over the next ten years?

Q20. Are there ways in which the potential relocation sites should be developed to help avoid, remedy or mitigate adverse effects on water quality?

Delay farm relocation until we have data on their effect on marine life and ecosystems in the Sounds and safety can be assured and until a waste capture/containment system is implemented.

Q21. Are there other effects on water quality that you would like us to be aware of?

As previously outlined, ocean acidification worldwide is expected to impact marine costal environments by altering the bioavailability and potential toxicity of many pH-sensitive metals. (Lewis, C et al. (2016) Ocean acidification increases copper toxicity differentially in two key marine invertebrates with distinct acid-base responses. Scientific Reports. Article No 21554(2016))

When the Deputy Chair of DBRA attended the briefing session run by staff of the Ministry of Primary Industries in Havelock on Tuesday 14th February she asked what chemicals –colorants, SLICE, endocrine disruptors, fungicides, metals etc does King Salmon use in the farming of salmon?
The answer she received was:

"NZ King Salmon does not use any chemicals, pharmaceuticals, hormones or "colourants".

To allow salmon to develop normal flesh colour and for fish health, astaxanthin is added to diets at amount of less than 80ppm. Astaxanthin accumulation is a biological requirement of salmon, as demonstrated by the fact that salmon muscle contains binding sites specific to astaxanthin, unlike the muscle of most other fish species. These binding sites cause salmon to capture and store ingested astaxanthin.

When astaxanthin is fed to species of fish that lack these binding sites, their flesh remains white. The

astaxanthin used is synthesised chemically, but is chemically identical to that which exists in nature. - *as per page 39 of NZKS Operations Report* (available here: https://www.mpi.govt.nz/news-and-resources/consultations/marlborough-salmon-relocation/)Astaxanthin is an important part of the salmon's normal diet, it is an antioxidant and is available as a human health food supplement."

In fact, Astaxanthin is a colourant. The synthetic variety is formed using petrochemicals.
Synthetic Astaxanthin is not the form used in human health food supplements and has not been approved for use in humans. It is approved as an additive to fish food.
Naturally occurring Astaxanthin (a carotenoid occurring in plankton, crustaceans and fish) has much higher antioxidant effect than synthetic versions. What do we know about the effect of synthetic Astaxanthin on wild marine life (when they are presumably getting their Astaxanthin from natural sources) and then possibly additional doses from salmon farm practices or waste?

Q22. What further information would you suggest the Minister for Primary Industries collects on water quality effects in relation to the Tio Point site?

Clearly the site has additional risks to marine life as shown by modelling of chlorophyll concentrations. It is important that there is independent scientific advice on how to reduce the risk should the Minister of Primary Industries decide to approve a salmon farm at this site.

Q23. What are your thoughts on the seabed effects at the potential sites?

New Zealand Government NZ Environmental Reporting Series: Our Marine Environment 2016 addresses three key issues. One of these is coastal marine habitats and ecosystems. This report stresses degradation due to:
* ocean acidification and impacts
* seabed trawling and dredging
* marine pests (note in salmon farming sea-lice outbreaks are high risk – as shown at present in the Northern Hemisphere where salmon farms are being decimated).
* excess nutrients being carried down waterways
* heavy metal toxicity on coastal and open ocean ecosystems
* loss of biodiversity

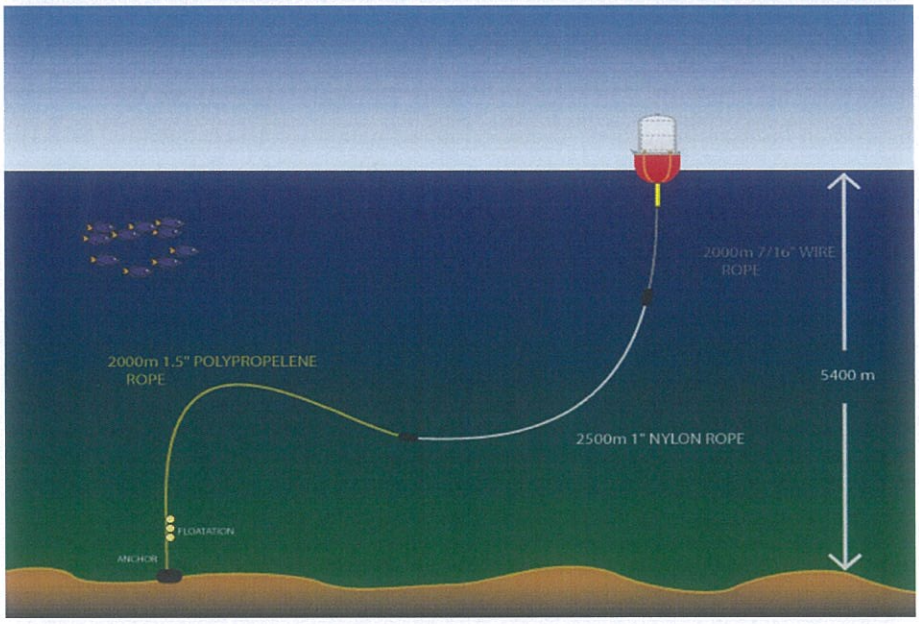
In 2015 17% of New Zealand's fish stocks were overfished.
Side catches of chondrichthyans – sharks, rays, elephant fish also reduce these stocks.
The report concludes that the full ecological impacts of fishing are not clear.

Likewise, the full ecological impacts of salmon farming, and indeed all aquaculture in the Sounds, is not clear. We need more data – not just about the seabed – but about all parts of the many marine ecosystems we are privileged to have in the Sounds. This is supported by Marlborough District Council scientific advice. (Sounds Advisory Group Meeting Public Forum 20/3/2017 in Rai Valley.)

Q24. Are there ways to develop the potential sites to help avoid, remedy or mitigate adverse effects on the seabed at each site?

Do site specific research of marine life and ecosystems before any farms are established.
Reduce area of farms, salmon numbers and food tonnage.
Set a date for implementation of waste capture and start planning now.
Independent monitoring of standards and prompt corrective action.

Replace screw anchors with technology more protective of the benthic environment eg. floating lines rather than chains.



There are three new ways to deal with the environmental effects of salmon farming:
marine floating bag system (MFB) – or alternatively "The Egg" system, land-based saltwater flow through system (LSF) and land-based freshwater recirculating systems (LFR). All these approaches have succeeded in making fish escapes, predator interaction and disease transmission nonexistent, while also lowering feed input, allowing for higher stock densities.
(Ayer and Tyedmers (2009)-Assessing alternative aquaculture technologies: Life cycle assessment of salmonid culture systems in Canada. Journal of Cleaner Production, 17(3) pp362-363.)

It is clear that the solution to protection of the seabed lies with the New Zealand salmon industry and their will to invest in their business with environmentally safer technologies and practices.

NZ King Salmon reported a 52% increase in profits to NZD 8.7 million for the six months to December 2016. NZ King Salmon IPO, raised NZD 154.5 million, and made China Resources Ng Fung a 10% shareholder, with a place on the board. (Rachael Mutter, 3/3/2017 IntraFish Media)
NZ King Salmon expansion in Chinese markets means New Zealand pays the environment price to satisfy the Chinese palate.

Q25. Are there other seabed values or effects that you would like the Minister for Primary Industries to be aware of?

There is a need for a comprehensive approach to marine research in the Sounds. To date studies have been of restricted scope and do not take into account the inter-reactions and interdependence of marine ecosystems present.

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Q26. Are there effects on pelagic fish that you would like the Minister for Primary Industries to aware of?

The MPI Consultative Document 2017/04 states:
"Six potential relocation sites have been identified and extensive work undertaken to evaluate the implications of developing salmon farms at these sites. Technical investigations to assess potential effects of relocation include water quality, benthic values, marine mammals, seabirds, pelagic fish, navigation, landscape and natural character, recreation and tourism, cultural values, biosecurity, disease, underwater lighting, heritage values, social values, and economic values."

This analysis overlooks the fact that blue cod (*Parapercis colias)* of the Mugiloidide family, is the true gem of the Sounds. It is not a pelagic fish but a demersal species of fish, which lives around the shoreline in rough, rocky ground with weed; is territorial; its territory sometimes our as far as 80m in depth. The rough rocky ground and weed are just the sites sought for salmon farms, which ultimately destroy this habitat.
Blue cod in the Sounds are already greatly reduced in numbers and size. This relocation proposal will put them under additional threat.

Q27. Are there effects on seabirds that you would like the Minister for Primary Industries to be aware of?

New Zealand Government NZ Environmental Reporting Series: Our Marine Environment 2016 addresses three key issues. One of these is native marine birds and mammals.
90% of our seabirds are threatened with or at risk of extinction.
Particularly at risk are albatross, penguins, and herons.
The Consultation Document 2017/04 also highlights the New Zealand King Shag being on the Nationally Endangered list.

What are the statistics to date regarding seabirds being damaged by salmon farm structures?
Has salmon farming to date had a negative impact on King Shag numbers?

Q28. Do any of the sites pose a greater risk to seabirds than other sites?

There is a gannet colony near Beatrix Bay and consequently gannets frequent the Tennyson Inlet/Waitata Reach areas. These birds dive from considerable height, penetrate the sea surface, and to a considerable depth to catch fish.
If the relocation of farms proceeds there needs to be specific protocols put in place to protect these birds and a reporting of all farm incidents involving gannets.

Titi Island and the Chetwode Islands at the entrance to Pelorus Sounds are both nature reserves.
Titi Island is home to the now rare yellow crowned kakariki and a host of other birds – including penguin, shearwaters, gulls, and terns. These rocky areas are also home to our native tuatara and other reptiles. If salmon farms are moved to the nearby areas of greater water flow, as planned, the habitat for many of these more unusual species may be threatened.

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Q29. Are there marine mammals in the Marlborough Sounds that you think may be particularly impacted by this proposal?

New Zealand Government NZ Environmental Reporting Series: Our Marine Environment 2016 addresses three key issues. One of these is native marine birds and mammals.
The report states that more than a quarter of New Zealand marine mammals are threatened with extinction, particularly dolphins, whales, and the New Zealand Sea Lion.

Dolphins frequent the Pelorus Sound. It is positive that the Department of Conservation is consulted in the preparation of the Marine Mammal and Shark Management Plan.
Reporting requirements are in place – so how many dolphins have been trapped or killed to date by aquaculture farming?

Five yearly reviews would seem to be too long between reviews – review should be annually.

Yes – and be undertaken by suitably qualified independent experts.

Q30. Do any of the potential sites pose a greater risk to marine mammals than other sites?

If you observe dolphin behavior - All of these sites pose a risk to them.
Dolphins are attracted to vessels in the Sounds, and so probably also to salmon farm structures.
They tend to roam in pods, with often up to twenty or so present. They eat, and follow shoals of fish.
They often criss-cross the Sounds and follow the coastline, sometimes quite close in to shore.

Q31. Do you agree that there should be an independently audited Biosecurity Management Plan for salmon farming?

Yes.
The MPI DigsFish report notes:
" 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 world best practice, notably including establishment of independent farm management areas separated by ideal buffer zones (Diggles 2011)."

It is also time the total impact of aquaculture/farming in the Marlborough Sounds is independently researched and action taken to protect species.

Q32. What are your thoughts on the potential improvement in salmon health from the proposal? What about salmon welfare and husbandry?

Standard 35 of Standards under Rule 35.3.3.1(b) – Odor management – mentions a 'mort' bin used for storing dead fish. There is no detail in the Standards under Rule 35.3.3.1(b) as to how these dead fish are to be disposed of. Are they discarded into the marine environment?

NZ King Salmon states that it does not use any chemicals, pharmaceuticals, hormones or "colourants". As discussed earlier in this submission, Astaxanthin is a colourant. The synthetic variety is formed using petrochemicals. Synthetic Astaxanthin is not the form used in human health food supplements and has not been approved for use in humans. It is approved as an additive to fish food.

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It is encouraging to see internationally the reduced use of antibiotics in salmon farming and the reduction in consequentual antibiotic resistance.
(Buschmann et al (2012) Salmon Aquaculture and Antimicrobial Resistance in the Marine Environment. PLoS ONE 7(8):e42724.doi:10.1371/journal.pone.0042724.)

New Zealand is fortunate to date, that lice treatment has not had to be included in salmon feed.
"If the need arose, antibiotics, lice treatments, anthelmintics or other animal remedies could be added to the feed." (NZ King Salmon operations report, pg 40.
Would use of these treatments be reported externally so that their use can be monitored as part of audit?

Apparently NZ King Salmon anaesthetizes its fish during harvest. The anaesthetic used is AQUI-S. (NZ King Salmon operations report, pg 47).
The active constituent of AQUI-S is eugenol 10% (derived from clove oil) which lowers the metabolic rate of fish during harvest. What controls are in place for preventing AQUI-S being taken up by wild fish and marine life in the vicinity of a fish farm?
(Cupp et al (2014) Aquaculture Research 2014.1-9. Dol:10.1111/are.12485.)

The MPI DigsFish report states in summary:

"A review of the disease status of chinook salmon (*Oncorhynchus tshawytscha*) in New Zealand since 2011 revealed few changes to the hazards identified previously in Diggles (2011), identifying 21 infectious agents and 13 non-infectious diseases of cultured salmon in New Zealand. An outbreak of disease in salmon cultured at Waihinau Bay in early 2012 was originally thought to be solely related to suboptimal environmental conditions at that site (MPI 2013).
However, subsequent testing has shown diseased fish at that location were also infected with an emerging rickettsia-like agent (NZ-RLO) and the endemic opportunist bacterium *Tenacibaculum maritimum*. These bacterial disease outbreaks at the low flow site in Waihinau Bay provide examples of the increased risk of disease emergence in fish cultured at suboptimal sites.
The current risk assessment found that clinical infection with *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. 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."

It is of great concern that Sounds wild fish are at greater risk of disease through the establishment of salmon farms in the Sounds.

The Deputy Chair of DBRA asked MPI whether salmon vaccination was being used in New Zealand. Apparently New Zealand King Salmon does not use any vaccines as a matter of standard practice. From time to time they test vaccines from other parts of the world on a small percentage of their population to see whether they provide any benefit in New Zealand. So far NZ King Salmon has not found this to be the case. They add:" it should be noted that a vaccine is not a medicine as such but instead boosts the salmon's natural innate immune defence."

In fish farming vaccines are made of inactivated bacteria and viruses or recombinant subunit proteins. Some vaccines are of mixed content . Use of attenuated strains or recombinant protein technology has been introduced as inactivated bacteria have demonstrated limited effect.

Live viruses have also been used in salmon farming and more recently vaccines altering salmon DNA.

To date there has obviously been a trial and error approach to development of fish vaccines.
Have vaccine trials by NZ King Salmon been approved by New Zealand Biosecurity?
What are the risks of viral shedding to wild fish around salmon farms using vaccines?

Sommerset et al (2005) Expert Res Vaccines 4(1):89-101)

Q33. Are there particular navigational effects at any of the potential relocation sites that the Minister for Primary Industries should be aware of?

1 Blowhole Point North – Te Hoiere /Pelorus Sound

Presence of additional farms in this area would make it difficult for recreational boaters to navigate. They tend to cut in close to the coastline here in rough weather in making their way to Pelorus Sound entrance.

2 Blowhole Point South – Te Hoiere/Pelorus Sound

Presence of additional farms in this area would make it difficult for recreational boaters to navigate. They tend to cut in close to the coastline here in rough weather in making their way to Pelorus Sound entrance.

3 Waitata Mid-Channel – Te Hoiere/Pelorus Sound

The salmon farm structure could create a navigation danger, particularly at night, and given that such a danger will not be shown on maritime charts.
The Navigatus Consulting report on the mid-channel site (Figure 18) shows routes taken by boats in the area. The nature of the winds means boaties tend to criss - cross this reach to access shelter and refuges. A mid-channel structure would inhibit such action.

4 Richmond Bay South – Te Hoiere/Pelorus Sound

Probably not a navigation danger.

5 Horseshoe Bay – Te Hoiere/Pelorus Sound

Probably not a navigation danger.

6 Tio Point – Kura Te Au/Tory Channel

The Navigatus Consulting report notes concerns raised by ferry operators regarding the Motukina Point location. Ferries and the other larger ships entering the channel on route to Picton must have room to maneuver – history has shown that a routine trip can become a disaster with weather changes.

Standard 15 under Rule 35.3.3.1(b) states that no mooring line shall be within 4.0 metres of the surface of the water beyond 20.0 metres distance from any part of the surface structures.
Has Port Marlborough assessed this standard in terms of possible impact on navigation?

Q34. What is your view on the Waitata Mid-Channel site from a navigational perspective, and the possibility of cruise ships or large superyachts using the area?

The salmon farm structure could create a navigation danger, particularly at night, and given the farms will not be shown on maritime charts – added danger.

Q35. Are there particular tourism and recreation values that you would like the Minister for Primary Industries to be aware of at any of the potential sites?

3 Waitata Mid-Channel – Te Hoiere/Pelorus Sound

The view from Post Office Point is at present probably the best view in the Marlborough Sounds. From the old gun emplacement is the view our WWII soldiers scanned for Japanese submarines. It would be a tragedy to dump a salmon farm in the middle of this view, and lose this part of our Sounds history.

Q36. What measures could be taken to remedy or mitigate effects on tourism and recreation values if salmon farms were relocated to these sites?

People need to know the rules regarding approaching and accessing a salmon farm by sea.

Q37. Are there other heritage values that the Minister for Primary Industries should be aware of?

Yes, those of us who have loved the Sounds over many years know that they are unique.
We hope the Sounds are there for our descendants far into the future.
Salmon farms may come and go but the Sounds can be there forever, if we protect it.

In 2012 June Harney, a home owner in Duncan Bay, Tennyson Inlet presented an excellent submission (No 0616) to the EPA Inquiry appointed under Section 1491 of the Resource Management Act (1991) to consider resource consent applications made by NZ King Salmon Co Ltd at that time. She outlined the early Maori history of the area and the early settler history.
We support Maori concerns regarding maintaining the Mauri of the Sounds and protecting Taonga.
Such loss could not be appeased through compensatory monetary payments.

Q38. Are there any other measures that should be taken to avoid, remedy or mitigate noise effects at any of the potential sites?

Comply with the standards and best practice guidelines – need independent monitoring of these.

Q39. Are there any other matters in relation to underwater lighting that you think the Minister for Primary Industries should be aware of?

Comply with the standards and best practice guidelines – need independent monitoring of these.

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Q40. Social and community effects of the potential relocation proposal are wider than just residential amenity. What effects do you think there will be as a result of the potential relocation proposal?

Earlier this year (2017) the findings of a study led by Newcastle University's Dr Alan Jamieson into the environmental contamination of the Pacific Ocean's Mariana and Kermadec trenches were released. The study found extremely high levels of Persistent Organic Pollutants – or POPs – in the fatty tissues of marine organisms in these trenches.

Dr Jamieson said:
"We think of the deep ocean as being this remote and pristine realm, safe from human impact, but our research shows that, sadly, this could not be further from the truth".
POPs accumulate through the food chain so that by the time they reach the deep ocean, concentrations are many times higher than surface waters. Do we just ignore these findings and submit the Marlborough Sounds to such risk?

Our NZ Biodiversity Strategy, p 57, states:
"About 8000 marine species have been described in New Zealand waters, including 61 seabirds, 41 marine mammals, 964 fish, 2000 molluscs, 350 sponges, 400 echinoderms, 900 species of seaweeds and 700 species of microalgae. However, there are many more to be discovered, with seven new species being identified on average each fortnight. Marine scientists estimate that perhaps as much as 80 percent of New Zealand's indigenous biodiversity is found in the sea."

Environmental destruction of the Marlborough Sounds is not just a local or national issue. It is an international issue. We all, including the Minister of Primary Industries, have an obligation to protect it.

Technological innovation in the salmon industry such as the closed containment system, would allow the Ministry of Primary Industry to support sound development of the salmon farming industry without devastating the Sounds environment.

The New Zealand Government needs to follow the example of other countries and require major technology shifts in the salmon industry to reduce the present heavy environmental footprint stomping the life out of our marine diversity.

This is **Our** Chance to Turn the Tide.

Written Comments No: 0224

Subject	**New Zealand King Salmon Proposal**
From	[redacted]
To	aquaculture submissions
Sent	Wednesday, 15 March 2017 7:02 p.m.

Yes we are all for New Zealand King Salmon Proposal to move, and the development they propose to do. It is a very well throught through plane.
Yours faithfully
D J Dyer & H A J Dyer.