



# Potential relocation of salmon farms in the Marlborough Sounds

Proposal to amend the Marlborough Sounds Resource Management Plan to enable the relocation of up to six existing salmon farms by regulations made under section 360A of the Resource Management Act 1991

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Prepared for consultation by the Ministry for Primary Industries



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# Contents

Page

We want your views.....	1
Ministerial foreword.....	3
<b>1 Executive Summary .....</b>	<b>4</b>
<b>2 Document structure.....</b>	<b>11</b>
<b>3 Part 1: Overview .....</b>	<b>12</b>
3.1 Background .....	12
3.2 Consultation with iwi authorities .....	18
3.3 Feedback sought.....	18
<b>4 Part 2: The proposal .....</b>	<b>19</b>
4.1 Objectives.....	19
4.2 Features of the proposal.....	19
4.3 Existing regulatory framework .....	23
<b>5 Part 3: Potential amendments to Marlborough Sounds Resource Management Plan: What would the amendments do? .....</b>	<b>27</b>
<b>6 Part 4: Existing and potential sites .....</b>	<b>30</b>
6.1 Summary of existing sites being considered for relocation.....	30
6.2 Compliance with Benthic Guidelines.....	32
6.3 Options for salmon farming in Marlborough Sounds to comply with the Benthic Guidelines .....	33
6.4 Priority of site relocations.....	38
6.5 Summary of potential sites for relocation.....	39
<b>7 Part 5: Summary of potential effects.....</b>	<b>43</b>
7.1 Potential cultural effects.....	43
7.2 Potential economic effects.....	43
7.3 Potential environmental effects .....	45
7.4 Overall summary of environmental effects at each potential relocation site .....	61
<b>8 Part 6: Having your say .....</b>	<b>66</b>
8.1 Consultation process.....	66
8.2 Your feedback .....	66
8.3 Written comments are official information.....	67
8.4 What happens next? .....	67
<b>Appendix 1: Salmon relocation: potential amendments to the Marlborough Sounds Resource Management Plan .....</b>	<b>69</b>
<b>Appendix 2: GPS coordinates of potential relocation site farm boundaries.....</b>	<b>103</b>

## We want your views

The Minister for Primary Industries, exercising aquaculture responsibilities, would like your feedback on a proposal to make regulations under section 360A of the Resource Management Act to amend the Marlborough Sounds Resource Management Plan to enable the relocation of up to six salmon farms. The proposal is outlined in **Parts 2** and **3**. The potential amendments to the Marlborough Sounds Resource Management Plan is provided in Appendix 1.

Many people are occupants or regular users of the Marlborough Sounds. You may have special knowledge or views about navigation, fishing or cultural values of the areas with existing salmon farms; or the areas to which farms could be relocated. Your feedback on the proposal is important to help decide whether the proposal is progressed, including which sites are considered appropriate for salmon farming.

All written comments must be received by the Ministry for Primary Industries no later than **5pm, Monday 27<sup>th</sup> March 2017**.

Written comments should be sent directly to:

- Emailed to: [aquaculture.submissions@mpi.govt.nz](mailto:aquaculture.submissions@mpi.govt.nz)
- Posted to:  
Salmon Farm Relocation  
Ministry for Primary Industries  
Private Bag 14  
Port Nelson 7042

To assist you in providing written comments, a Feedback form is provided at <http://www.mpi.govt.nz/news-and-resources/consultations> .

Further information on the feedback process, including the application of the Official Information Act 1982, is provided in **Part 6** of this document.

## Where to find information

To assist you in providing feedback, the following supporting information is available to view or download from the Ministry for Primary Industries' website (<http://www.mpi.govt.nz/news-and-resources/consultations>)

- *Best Management Practice guidelines for salmon farming in the Marlborough Sounds: Benthic environmental quality standards and monitoring protocols*
- Summary Assessment of Environmental Effects (AEE)
- Assessment of environmental effects technical reports and associated peer review documents
- Cultural Impact Assessments
- Photo Simulations of Proposed NZKS Salmon Farm Sites at Blowhole Point North, Blowhole Point South, and Waitata Mid-Channel
- Marlborough Salmon Working Group Advice Report
- Cabinet Paper
- Regulatory Impact Statement (RIS)
- *The Social and Community Effects of Salmon Farming and Rearing: A case study of the top of the South Island.*



## Public Hearings

A Marlborough Salmon Farm Relocation Advisory Panel will hold hearings in April. This panel will be made up of three resource management experts. The hearings will allow people to speak to their written comments.

If you would like to attend a hearing and meet with the panel, will you please let us know as part of your written comments. Once we receive your written comments and your request to meet with the panel, we will notify you of the date, time and location.

## Expert workshops

As part of the process expert workshops will be conducted as required to discuss and resolve any outstanding issues with the available information.

## Official Information Act 1982

All written comments are subject to the Official Information Act and can be released (along with personal details of the submitter) under the Act. If you have specific reasons for wanting to have your written comments or personal details withheld, please set out your reasons in the written comments. MPI will consider those reasons when making any assessment for the release of written comments if requested under the Official Information Act.

# Ministerial foreword

Minister for Primary Industries, Hon Nathan Guy



Aquaculture is a valuable industry to New Zealand. Salmon farming provides people with jobs and helps our regional economies to grow. In Nelson and Marlborough, 321 people are employed in the salmon farming industry. However, it is important to recognise that people have many different values in the coastal space where salmon is farmed. The Marlborough Sounds is important to people for social, cultural, environmental and economic reasons.

It is important – to the Government, iwi, the public and the industry – that the effects of salmon farming on the marine environment are managed well. The recently developed Benthic Guidelines for salmon farming in the Marlborough Sounds are an excellent example of collaboration to improve the environmental performance of this important industry. I am committed to seeing the Benthic Guidelines implemented.

Salmon farming practice has come a long way in recent years, and we now understand that some of the farms in the Marlborough Sounds are not well located. This means that good environmental and economic outcomes cannot be achieved at the same time. For this reason, I have asked the Ministry for Primary Industries to consult tangata whenua, the public and iwi authorities on my behalf, on a proposal to regulate under section 360A of the Resource Management Act 1991 to enable some existing salmon farms to be relocated to more appropriate sites.

This proposal is about ensuring good environment management of salmon farms and finding a better balance between the different values people hold in the Marlborough Sounds. Relocating farms provides an opportunity to get better outcomes by reducing environmental effects and moving farms to less populated areas. Because the sites would be more productive, jobs and value would be added to the regional economy. This would support the Government's policy for aquaculture as set out in the New Zealand Coastal Policy Statement, the Aquaculture Strategy, and the Natural Resource Business Growth Agenda, to increase the productivity of natural resources while reducing environmental effects.

To consider options for implementing the Benthic Guidelines, Ministers asked officials to convene the Marlborough Salmon Working Group comprising local government, iwi, community and aquaculture industry stakeholders. The Working Group's report, along with background work to assess potential relocation sites, is publicly available. I would like to thank members of the Working Group for their hard work. I also want to acknowledge the Marlborough District Council for working with officials to develop this proposal.

I now want to hear your views on the proposal to make regulations under section 360A of the Resource Management Act 1991 to amend the Marlborough Sounds Resource Management Plan to enable the relocation of up to six salmon farms. Before I can recommend the making of regulations, I must be satisfied that the proposal is of national or regional significance under Section 360B (2)(C)(ii) of the Resource Management Act. I want your feedback on the details of the potential amendments to the Marlborough Sounds Resource Management Plan, and which existing farms should be relocated and which potential new sites are appropriate for salmon farming. No decisions have been made at this stage. It is important to get your feedback so I can make a fully informed decision about whether to proceed, and if so, which sites to include. I look forward to receiving your views.



# 1 Executive Summary

The Minister for Primary Industries<sup>1</sup> seeks your feedback on a proposal to amend the Marlborough Sounds Resource Management Plan to enable the relocation of up to six salmon farms in the Marlborough Sounds. The Minister is considering recommending regulations under section 360A of the Resource Management Act 1991 to enable the relocation of up to six salmon farms to higher-flow sites. The reasons for relocating sites are that it:

- would ensure the environmental outcomes from salmon farming are improved through implementation of benthic best management practice;
- may improve the social and cultural outcomes from salmon farming by creating jobs, and moving salmon farms away from areas of high competing use;
- would maintain or increase the economic benefits from salmon farming.

This proposal provides for industry growth through more efficient use of marine farming space, rather than from creating additional new space.

The existing salmon farms and the potential farm relocation sites are shown in Maps 1 and 2. GPS coordinates for farm boundaries are provided in Appendix 2.

## Salmon farms in the Marlborough Sounds must meet environmental standards

Salmon have been farmed in the Marlborough Sounds for about 30 years. Managing the environmental effects of salmon farming appropriately is important to the government, iwi, the public, and the aquaculture industry.

In 2014 local and central government, industry, scientists and the local community worked together to develop *Best Management Practice Guidelines for salmon farming in the Marlborough Sounds: Benthic environmental quality standards and monitoring protocols* (Benthic Guidelines). The Benthic Guidelines ensure good management of the effects of salmon farming on the seabed in the Marlborough Sounds. They provide clear and consistent requirements for independently conducted annual seabed monitoring and management of existing salmon farms.

There are 11 fully consented<sup>2</sup> salmon farms in the Marlborough Sounds. These are operated by the New Zealand King Salmon Company Ltd (King Salmon). The company has undertaken to voluntarily adopt the Benthic Guidelines across all farms prior to re-consenting in 2021 to 2024. Implementing the Benthic Guidelines at some farms is likely to lead to a loss of production and employment.

## Relocating farms to higher-flow sites could reduce environmental effects and allow increased productivity

Based on our growing understanding of salmon farming, sites with higher water flows have reduced environmental effects on the seabed compared to lower-flow sites. Therefore, the

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<sup>1</sup> The Minister for Primary Industries has delegated responsibilities for aquaculture.

<sup>2</sup> Fully consented for both occupation and discharge consents.

higher the water flow at a salmon farm, the more salmon production (and associated feed levels) may be increased without exceeding the limits set by the Benthic Guidelines.

Sites that have higher water flow are also better for the health of the farmed fish, enable greater resilience to increasing sea temperatures, and provide more opportunity for effective management of biosecurity risks.

Six of the existing 11 salmon farming sites in the Marlborough Sounds have lower flows than are ideal for modern salmon farming practices. These sites are:

**Tōtaranui/Queen Charlotte Sound:**

- Ruakaka Bay
- Otanerau

**Te Hoiere/Pelorus Sound:**

- Forsyth Bay
- Waihinau Bay
- Crail Bay (two farms). The Crail Bay sites have not been stocked since 2011.

To comply with the Benthic Guidelines, these farms would have to reduce their feed levels. This would mean lower production, which would in turn reduce the economic benefits and have potential adverse social effects through job losses.

To maximise the medium to long-term benefits from salmon farming, the Ministry for Primary Industries has been working with central and local government, King Salmon and the Marlborough Salmon Working Group (Working Group)<sup>3</sup> to assess options to implement the Benthic Guidelines at the lower-flow sites.

The Minister for Primary Industries now seeks your feedback on a proposal to relocate some or all of the six lower-flow farms to sites with higher water flows. These potential sites are as follows.

**Te Hoiere/Pelorus Sound:**

- Blowhole Point North
- Blowhole Point South
- Waitata Mid-Channel
- Horseshoe Bay
- Richmond Bay South

**Kura Te Au/Tory Channel:**

- Tio Point

The potential relocation sites are more suitable for farming salmon because they have higher current flows and deeper waters. Relocation could also deliver social and cultural benefits,

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<sup>3</sup> The Working Group consisted of representatives from central and local government, iwi, the aquaculture industry, and key community interest groups.



for example, by moving the farms away from residential dwellings<sup>4</sup> and areas of higher public use.

A photo simulation report showing the intended salmon farm structures at potential relocation sites Blowhole Point North, Blowhole Point South, and Waitata Mid-Channel is available on the Ministry for Primary Industries' website (<http://www.mpi.govt.nz/news-and-resources/consultations>). These simulations illustrate what a potential salmon farm would look at each site *in situ*.

Relocating the six sites could add up to approximately \$49 million annually to the regional Gross Domestic Product (GDP) and the employment of approximately 511 Full Time Equivalents (FTEs). By comparison, current production at the four operational existing lower-flow farms provide an estimated annual GDP value of \$10 million and employment of 105 FTEs. In addition, there is a potential one-off GDP increase of approximately \$3.2 million for the Nelson and Marlborough economy to construct each relocated farm. Construction activities for each site would support approximately 39 FTEs for the region for a year.

Relocating farms requires amending the Marlborough Sounds Resource Management Plan. Some of these sites are in areas where aquaculture is currently prohibited (Coastal Marine Zone One, CMZ 1<sup>5</sup>). The Minister for Primary Industries is considering recommending regulations, under section 360A of the Resource Management Act, which would change the Marlborough Sounds Resource Management Plan to allow applications to the Marlborough District Council for resource consents to farm salmon at specific sites. The regulations would also provide a rules framework that intends adverse environmental effects are minimised. Potential amendments to the plan are in Appendix 1.

The potential amendments would ensure there is no overall increase in total surface structure area used for salmon farming in the Marlborough Sounds. Nearly all of the vacated space would be closed to aquaculture.<sup>6</sup>

The potential amendments identify the activity of salmon farming in these relocation sites as 'restricted discretionary'. There are detailed conditions specified in the potential amendments that will relate to the marine farms. This will be your only opportunity to comment on those conditions.

There are also matters identified in the potential amendments over which the Marlborough District Council's discretion would be restricted. On the basis of those matters, the Marlborough District Council may decline or grant the application subject to conditions.

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<sup>4</sup> If relocation proceeds, the number of residential dwellings within one kilometre that have direct lines of sight of salmon farms in Queen Charlotte Sound/Tory Channel would reduce from 21 to 3. In Pelorus Sound, there would be no residential dwellings within one kilometre of a salmon farm with direct lines of sight.

<sup>5</sup> The Marlborough Sounds Resource Management Plan presently divides the Marlborough Sounds into three Coastal Marine Zones – CMZ 1, CMZ 2 and CMZ 3. CMZ 1 includes areas where no application can be made for marine farming i.e. marine farming is a prohibited activity. CMZ 2 is where a marine farming application can be made and a range of statuses apply from one where consent must be granted (for existing marine farms) through to statuses where consent can be refused. CMZ 3 has recently been added to the Plan by the Environmental Protection Authority as a consequence of its decision on the King Salmon application to create specific salmon farming zones in 2013.

<sup>6</sup> Only salmon farming would be prohibited at the Crail Bay MFL32 site to ensure that existing mussel farming operations could continue.

It is anticipated that many of the issues will be addressed through this consultation process on the proposal and, therefore, the potential amendments to the plan as outlined in Appendix 1 provide that applications do not need to be publicly notified (although the Marlborough District Council may notify directly affected persons who can submit on a resource consent application). Unless the Marlborough District Council decides that it will notify an application (which may be to directly affected persons only), this consultation process on the proposal will be the only opportunity for tangata whenua and the public to comment on these discretionary matters.

The potential amendments would also require implementation of staged adaptive management of any relocated sites, including staging of fish feed levels over time.

### **Additional monitoring will ensure effects of salmon farms are understood**

If relocation proceeds, King Salmon would provide advanced real-time monitoring buoys to ensure cumulative water quality effects are appropriately monitored and managed. In addition to providing greater confidence in salmon farm management practices, this data would provide improved state of the environment monitoring of the wider Marlborough Sounds benefiting all users. The government is working closely with the Marlborough District Council to ensure improve state of the environment monitoring is achieved.

### **Farms may no longer be commercially viable if not relocated**

If the farms are not relocated, King Salmon is still committed to implementing the Benthic Guidelines at all its farms. This would require initial fallowing (see page 20) of lower-flow farms for two to five years to allow the seabed to recover before recommencing production at reduced stocking levels (and associated feed levels). Over the fallowing period it is estimated that \$10m GDP per annum and 105 FTEs would be lost.

There is scientific uncertainty about the exact stocking levels required for farms to meet the Benthic Guidelines following the fallowing period. Therefore, GDP and FTE implications under both minimum and maximum levels described below are based on estimates.

The Cawthron Institute has estimated the maximum and minimum ongoing feed and stocking levels for each of the four operational<sup>7</sup> lower-flow sites (Ruakaka Bay, Otanerau, Waihinu Bay, and Forsyth Bay) to meet the Benthic Guidelines. Under minimum potential feed levels, all four of these sites would not be commercially viable resulting in an estimated ongoing loss of \$10 million GDP and 105 FTEs less than currently. Not only would there be these losses, but potential social, cultural and environmental benefits of relocation would also not be delivered. Under the maximum potential feed levels to meet the Benthic Guidelines, three of the four sites (Waihinu Bay, Forsyth Bay, and Otanerau) would remain commercially viable under reduced production levels. Reduced production at these three sites is estimated to result in an ongoing economic impact of \$3.6 million GDP and loss of 38 FTEs.

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<sup>7</sup> Note, the two Crail Bay sites have not been operational since 2011 and are not included in this estimate. Research shows (PwC, 2016) Marlborough Salmon Relocation - Economic Impact Assessment) that they will not be commercially viable under the Benthic Guidelines.



### There are three potential outcomes from this proposal

The Minister for Primary Industries seeks your feedback on which sites you consider appropriate for salmon farming. He also seeks feedback on which existing sites should be prioritised for relocation. As such, there could be three outcomes from this proposal.

Outcome One	Make regulations under section 360A to change the Marlborough Sounds Resource Management Plan to enable relocation of all six existing lower-flow farms to the potential higher-flow relocation sites
Outcome Two	Make regulations under section 360A to change the Marlborough Sounds Resource Management Plan to enable relocation of some lower-flow farms to potential higher-flow sites, while others remain in their present location
Outcome Three	Not make regulations under section 360A and all existing lower-flow farms remain at their present location

### Your feedback will help the Minister decide how to progress

The Minister for Primary Industries is required to consult with the public, tangata whenua and iwi authorities before he can decide whether to recommend regulations under section 360A. As part of the public consultation process, public drop-in sessions will be held. Details of the public drop-in sessions can be found on the Ministry for Primary Industries' website at <http://www.mpi.govt.nz/news-and-resources/consultations>. Hui will be held with relevant iwi authorities.

To help you provide feedback/comment on this proposal, this document provides relevant background information. Further supporting information is available to view or download from the Ministry for Primary Industries' website at <http://www.mpi.govt.nz/news-and-resources/consultations>.

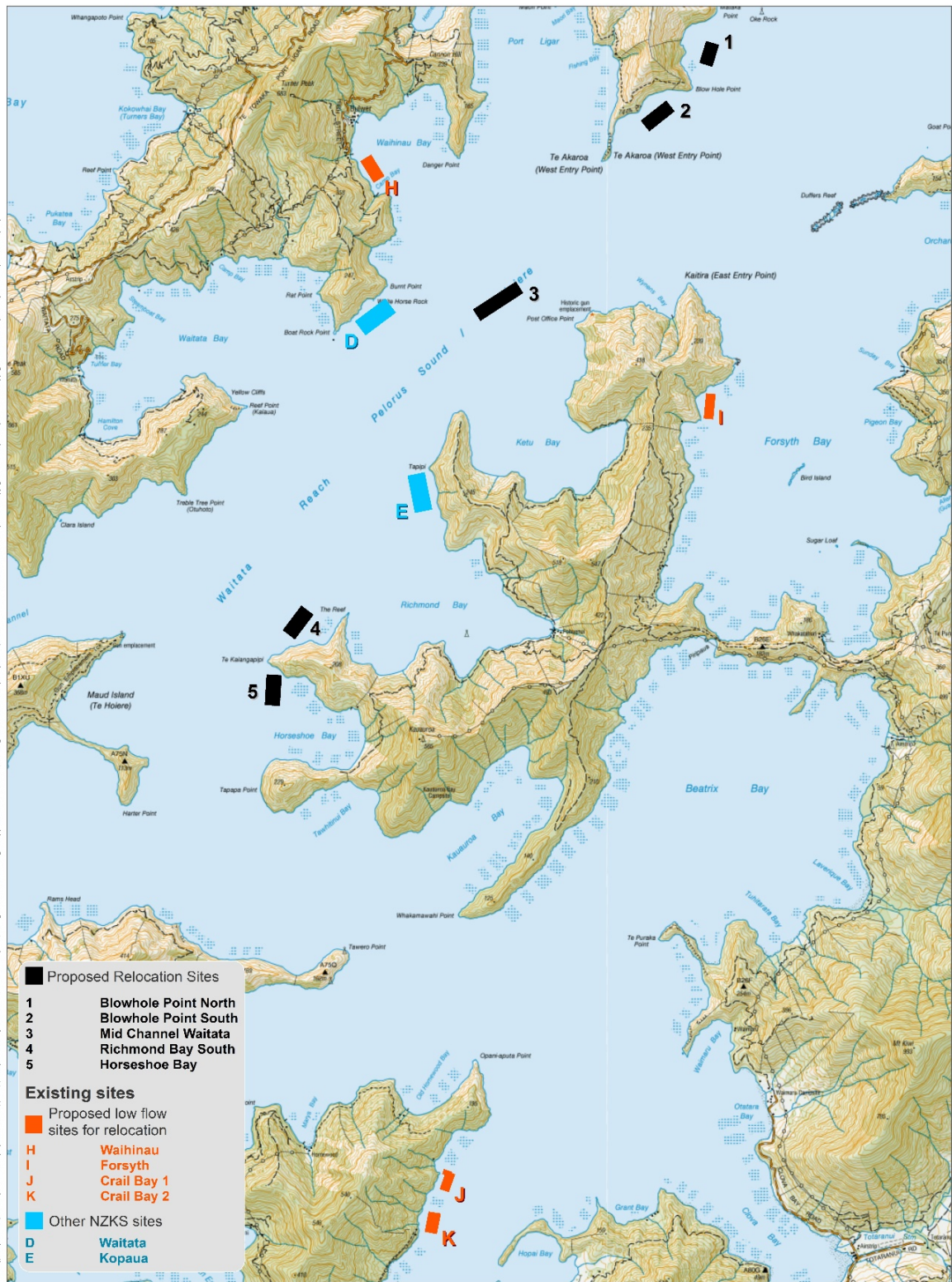
All written comments must be received by the Ministry for Primary Industries no later than **5pm, Monday 27<sup>th</sup> March 2017**.

Following the closing date for written comments, there will be an opportunity for persons to attend a public hearing to speak to their comments with an independent panel, called the Marlborough Salmon Farm Relocation Advisory Panel. The panel will be made up of three resource management experts. This panel will review the expert research reports, analyse all written comments and hold public hearings after the submission period, and prepare a written report and recommendations to the Minister for Primary Industries.

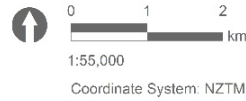
The panel's report, together with final advice from agencies on the proposal and statutory requirements, will form the basis of the Minister's decision on whether to recommend the use of regulations to enable relocation.

For further information on how to be involved, please see **Part 6** of this document.

Disclaimer: This map and all information accompanying it is for general information only. It is not a legal document and should not be used for any purpose other than that for which it was developed. The information shown in this map is based on a summary of data obtained from various sources. While all reasonable efforts have been taken to ensure the accuracy of the map, the Ministry of Primary Industries does not accept any liability for any errors or omissions in the map. The map is subject to change without notice. The map is not to be used for any purpose other than that for which it was developed.



Ministry for Primary Industries  
Manatū Ahu Matua



**Map 1: Existing and Potential Relocation Sites  
Pelorus Sound, Marlborough**

Date: 11/11/2016  
Produced by: Spatial Analysis Solutions  
Ref: r160467





Ministry for Primary Industries  
 Manatū Ahu Matua



Data Attribution:  
 This map uses data sourced from LINZ  
 under CC-BY and Hillshade data, 2003,  
 Geographx.



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Coordinate System: NZTM

**Map 2: Existing and Potential Relocation Sites  
 Queen Charlotte Sound, Marlborough**

Date: 11/11/2016  
 Produced by: Spatial Analysis Solutions  
 Ref: r160467

## 2 Document structure

This document has five parts and two appendices:

Part 1 – provides an overview, and includes background information, the regulatory frameworks, and how to lodge written comments
Part 2 – describes the proposal
Part 3 – summary of potential amendments to the Marlborough Sounds Resource Management Plan
Part 4 – describes existing and potential sites
Part 5 – summarises potential effects
Part 6 – outlines how to have your say
Appendix 1 – describes the potential amendments to the Marlborough Sounds Resource Management Plan
Appendix 2 – GPS coordinates of potential relocation site farm boundaries



# Part 1: Overview





## 3 Part 1: Overview

### 3.1 BACKGROUND

Salmon have been farmed in the Marlborough Sounds for about 30 years and the region produces approximately 70 percent of New Zealand's farmed salmon. The New Zealand King Salmon Company's (King Salmon) application to the Environmental Protection Authority in 2011 for new salmon farms<sup>8</sup> highlighted the need for co-operation between the aquaculture industry, the Marlborough District Council, iwi, and the community when it comes to managing salmon farming and the marine environment.

King Salmon is the only company farming salmon within the Marlborough Sounds and has 11 fully consented salmon farming sites. Some of these sites were originally licenced under the Marine Farming Act 1971; however all farms now hold resource consents under the Resource Management Act 1991. The consent conditions vary between farms as they were consented at different times. Six of these sites are located in lower-flow areas that are not ideal for modern salmon farming practices from an environmental, social, cultural and economic perspective. These sites are Ruakaka Bay and Otanerau in Tōtaranui/Queen Charlotte Sound, and Forsyth Bay, Waihinu Bay and two sites at Crail Bay in Te Hoiere/Pelorus Sound. Although fully consented, the two Crail Bay sites have not been farmed since 2011.

Farming in lower-flow areas can result in a greater level of seabed deposition and enrichment beneath the salmon farm. In addition, lower-flow sites have lower productivity potential and greater fish health and biosecurity management issues.

In 2014, local and central government, industry, scientists and the local community (including the Sounds Advisory Group) worked together to develop the *Best Management Practice guidelines for salmon farming in the Marlborough Sounds: Benthic environmental quality standards and monitoring protocols* (Benthic Guidelines). The Benthic Guidelines provide clear and consistent requirements for independent benthic (seabed) monitoring and management responses. The Benthic Guidelines specify environmental quality standards that provide environmental "bottom lines" to assess the effects of salmon farming on seabed enrichment.

The Benthic Guidelines are currently not part of the consent conditions, but it is anticipated that they will become part of consent conditions for salmon farming in future. The four operative lower-flow farms (Ruakaka Bay, Otanerau, Waihinu Bay, and Forsyth Bay) comply with their existing consent requirements. These existing consent requirements do not currently include the Benthic Guidelines, and would not comply at this time under existing feed levels. Monitoring indicates that in order to meet the more stringent standards, decreases in feed levels would be necessary. While salmon have not been farmed at the two other lower-flow sites in Crail Bay since 2011, they are not expected to comply with the Benthic Guidelines either.

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<sup>8</sup> As a result of this process three new salmon farms were approved in 2013 (Kopaua, Waitata and Ngamahau).





At ES5, species diversity has declined and the abundance of seabed life such as worms and nematodes is at its maximum. With these organisms turning over and irrigating the seabed, the organic matter from a farm (uneaten feed and faeces) is able to be processed at the rate it is deposited. Exceeding ES5 means the seabed receives too much organic matter, which may reduce the availability of oxygen in the seabed sediments, and this can lead to changes in the type and number of marine species inhabiting the seabed. In the worst case scenario, this can lead to a release of methane and hydrogen sulphide gasses through the sediments.

### 3.1.1 What is the problem?

Implementing the Benthic Guidelines at the existing farm sites would cause negative economic impacts and job losses. King Salmon is committed to improving the environmental performance from all its salmon farms by implementing the Benthic Guidelines. This would require reduced stocking levels and associated feed levels at its lower-flow sites. Economic analysis suggests this would result in a loss of approximately \$10 million GDP per year and 105 FTEs during a necessary two to five year fallowing<sup>9</sup> period, and then an ongoing GDP loss of approximately \$3.6 million to \$10 million per year. There would also be an estimated ongoing loss of employment of 38 to 105 FTEs.

The government sees salmon farming as an economic growth opportunity that could deliver jobs to regional communities. The Government's policy for aquaculture as set out in the following documents: the New Zealand Coastal Policy Statement (2010) (NZCPS),<sup>10</sup> the Aquaculture Strategy (2012),<sup>11</sup> and the Natural Resource Business Growth Agenda (2015)<sup>12</sup> aims for natural resources to increase productivity while reducing environmental effects. Intervening to enable relocation of salmon farms to more productive and sustainable sites is consistent with this aim. Based on these documents, the Government's policy for aquaculture is:

- i. To recognise the significant existing and potential contribution of aquaculture to the social, economic and cultural well-being of people and communities by:
  - a. Including in regional policy statements and regional coastal plans provision for aquaculture activities in appropriate places in the coastal environment, recognising that relevant considerations may include:
    - i. The need for high water quality for aquaculture activities; and
    - ii. The need for land-based facilities associated with marine farming;

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<sup>9</sup> One approach used to mitigate effects of marine farming activity on the immediate environment is fallowing. This involves the destocking (removal of fish) of sea pens for a period of time to allow the seabed underneath the pens to recover.

<sup>10</sup> New Zealand Coastal Policy Statement 2010. Department of Conservation.

<sup>11</sup> Government's Aquaculture Strategy and Five-Year Action Plan to Support Aquaculture. 2012.

<http://www.fish.govt.nz/NR/rdonlyres/20A0ED89-A20B-4975-9E63-6B302187840D/0/AQUAStrat5yrplan2012.pdf>.

<sup>12</sup> Building Natural Resources Chapter 4: Business Growth Agenda, Towards 2025. Ministry of Business, Growth and Employment, 2015  
<http://www.mbie.govt.nz/info-services/business/business-growth-agenda/pdf-and-image-library/towards-2025/BGA%20Natural%20Resources%20Chapter.pdf>.

- b. Taking account of the social and economic benefits of aquaculture, including any available assessments of national and regional economic benefits; and
  - c. Ensuring that development in the coastal environment does not make water quality unfit for aquaculture activities in areas approved for the purpose;
- ii. To support well-planned and sustainable aquaculture growth;
- iii. To improve productivity while reducing environmental impact; and
- iv. To support aquaculture development regionally.

In 2012, the Ministry for Primary Industries began a process to identify potential aquaculture space (finfish, mussels and oysters) in the Marlborough Sounds to deliver the Crown's Treaty of Waitangi aquaculture obligations to iwi. An initial list of over 100 potential sites was identified, but subsequently refined to a very small number of suitable sites following constraint mapping using environmental, bio-physical, hydrological, fisheries and RMA information.

This process demonstrated that:

- opportunities for salmon farm relocation are limited to nine higher-flow sites, which were considered by the Working Group, and
- opportunities for future salmon growth are highly constrained.

This proposal was initiated in early 2015 after King Salmon approached the government and Marlborough District Council expressing a desire to relocate its existing lower-flow farms to higher-flow sites in order for all farms to comply with the Benthic Guidelines.

Natural Resource Business Growth Agenda Ministers recognised that exploring relocation was potentially a pragmatic approach to improve environmental performance while increasing salmon production in the Marlborough Sounds – an area of high competing use and values.

In 2015, the Ministry for Primary Industries began work with Marlborough District Council and the Department of Conservation to explore options to meet the Benthic Guidelines, including relocation.

### 3.1.2 What makes a good site for salmon farming?

The main seabed effects from salmon farming come from deposition of salmon faeces and uneaten food. Accumulation of material on the seabed can lead to nutrient enrichment and oxygen depletion. These effects are usually concentrated directly beneath the farm, and become less concentrated with increasing distance. While the effects can be pronounced, research shows the seabed communities can recover to a functional state within five years of the farm being removed.<sup>13</sup> For a full analysis of the ecological effects of aquaculture, refer to

<sup>13</sup>Keeley, N.B., Macleod, C.K., Hopkins, G.A., Forrest, B.M., 2014. Spatial and temporal dynamics in macrobenthos during recovery from salmon farm induced organic enrichment: when is recovery complete? Mar. Pollut. Bull. 80, 250–262.

*Overview of Ecological Effects of Aquaculture* (Ministry for Primary Industries, 2013)  
<http://www.mpi.govt.nz/news-and-resources/consultations>.

When salmon farms are located in higher currents and deeper water, the well-flushed environment leads to less intense localised enrichment of the seabed through resuspension, dilution and dispersal of farm-derived nutrients. Operational practices are also important to managing seabed effects. Farms can be managed with careful monitoring, controlling the number of fish in the farm, minimising feed waste, and by changing stocking and feed levels if the effects get beyond unacceptable levels.

Farms should be placed over areas with low ecological value, such as flat muddy or silty bottoms, where fewer and more common species grow. In particular, farms should be placed away from reefs that typically have higher biodiversity.

Research by the Cawthron Institute<sup>14</sup> into seabed recovery during fallowing of the Forsyth Bay salmon farm showed substantial improvement in seabed health (biological and chemical remediation) beneath the site in the first two years; followed by more gradual and varied improvements over the next two to three years. Functional recovery<sup>15</sup> had been achieved after about five years. Research will continue on seabed remediation that has the potential to facilitate seabed recovery where farms have been vacated.

Along with ecological effects, salmon farms have cultural, social and economic effects that must be considered when selecting sites.

### 3.1.3 Work on relocation so far: Marlborough Salmon Working Group

In mid-2016, the Ministry for Primary Industries, supported by the Marlborough District Council, convened the Marlborough Salmon Working Group (Working Group). The Working Group considered options to implement the Benthic Guidelines so that better environmental<sup>16</sup> outcomes for salmon farming in Marlborough could be realised in the medium term.

The group comprised nominated individuals from the Ministry for Primary Industries, Department of Conservation, Marlborough District Council, Te Tau Ihu Forum, King Salmon, Aquaculture New Zealand, and local community interest groups. This group considered a range of options, including reducing stocking levels (and associated feed levels) at existing lower-flow farms, waste capture, seabed remediation, improving feed efficiency, land-based aquaculture, offshore farming, and relocation. The Working Group has produced a

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<sup>14</sup> Keeley, N.B., Macleod, C.K., Hopkins, G.A., Forrest, B.M., 2014. Spatial and temporal dynamics in macrobenthos during recovery from salmon farm induced organic enrichment: when is recovery complete? *Mar. Pollut. Bull.* 80, 250–262; Keeley, N.B., Forrest, B.M., Macleod, C.K., 2015. Benthic recovery and re-impact responses from salmon farm enrichment: Implications for farm management. *Aquaculture* 435, 412–423.

<sup>15</sup> “Functional recovery may be considered to represent the point at which a system has demonstrated its capacity to recover based on the biological characteristics of the community” (Macleod *et al.*, 2008).

<sup>16</sup> Resource Management Act definition of “environment” – from the Resource Management Act

“Environment” includes—

- a) Ecosystems and their constituent parts, including people and communities; and
- b) All natural and physical resources; and
- c) Amenity values; and
- d) The social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) of this definition or which are affected by those matters.



report outlining a range of views, which is available on the Ministry for Primary Industries' website here <http://www.mpi.govt.nz/news-and-resources/consultations>.

The purpose of the report is to present the Working Group's views, opinions and recommendations to the Minister for Primary Industries regarding the implementation of the Benthic Guidelines at six lower-flow consented salmon farms. This report is a useful document that highlights key issues which people may refer to when providing feedback on this proposal.

The Working Group concluded that options of reducing stocking levels (and associated feed levels) at existing lower-flow farms and relocation to implement the Benthic Guidelines have the most merit in light of available technology. Although other options may be viable in the future, the existing farms face current constraints around their economic viability, logistics and timeframes for technology to be developed. Options such as offshore farming and waste capture are not yet technically feasible, although they may be possible in the future.

While the Working Group considered there are two options, the Minister is consulting on a proposal to make regulations to amend the Marlborough Sounds Resource Management Plan. If relocation is not appropriate, the default position is the farms will remain at their existing sites and then it would be up to Marlborough District Council to consider reducing stocking levels.

The Working Group considered nine potential sites for relocation. These were analysed using information on bio-physical, environmental, social, cultural and economic factors. As a result of feedback received from the Working Group, three potential sites have been eliminated from further consideration. The Working Group recommended three potential relocation sites to proceed to consultation (Richmond Bay South, Horseshoe Bay and Tio Point). There were divergent views on whether the remaining three potential relocation sites (Blowhole Point North, Blowhole Point South and Waitata Mid-Channel) were appropriate to proceed to consultation.

In order to seek wider public and iwi views, the Minister is consulting on a proposal to amend the Marlborough Sounds Resource Management Plan to allow the relocation of up to six sites (Blowhole Point North, Blowhole Point South, Waitata Mid-Channel, Richmond Bay South, Horseshoe Bay, and Tio Point).

### **3.1.4 Role of New Zealand King Salmon**

King Salmon has participated in the Marlborough Salmon Working Group and has met all the costs of preparing and peer reviewing the technical reports commissioned to assess effects of the relocation proposal. However, to ensure impartiality, the Ministry for Primary Industries procured and managed the research contracts for all the technical reports. King Salmon has also provided operational information as needed to inform particular technical reports.

### 3.2 CONSULTATION WITH IWI AUTHORITIES

The Ministry for Primary Industries will engage directly with the local iwi authorities on the proposal. The eight iwi with Statutory Acknowledgements (2014) in the Marlborough Sounds area are: Te Ātiawa o Te Waka a Māui, Ngāti Rārua, Ngāti Kōata, Ngāti Tama ki Te Tau Ihu, Ngāti Apa ki Te Rā Tō, Ngāti Toa Rangatira, Ngāti Kuia/Hineparawhenua and Rangitāne o Wairau.

In early 2016, the Ministry for Primary Industries began engagement on this proposal through regular meetings with Te Tau Ihu Forum, which involves representatives from all eight iwi. The Ministry for Primary Industries engaged a consultant to work with local iwi to prepare a Cultural Impact Assessment. Ngāti Kōata chose to prepare its own Cultural Impact Assessment to help inform the process.

The two Cultural Impact Assessments identify potential cultural issues that are both general, and site specific. To maximise opportunity for engagement and development of potential mitigation measures, consultation with iwi will continue through both Te Tau Ihu Forum and individual iwi authorities. In addition, iwi are free to provide input into all aspects of the consultation process.

### 3.3 FEEDBACK SOUGHT

The Minister for Primary Industries seeks your feedback on this proposal. In particular:

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

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

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

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

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

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

The questions listed above are a guide only and all comments are welcome. Further questions related to particular sites and effects are included in **Parts 4 and 5**.



## Part 2: The proposal





## 4 Part 2: The proposal

### 4.1 OBJECTIVES

The objectives of the proposal are to:

- improve the environmental performance of salmon farming in the Marlborough Sounds by ensuring implementation of the Benthic Guidelines;
- maintain or improve the social and cultural outcomes of salmon farming in the Marlborough Sounds;
- maintain or increase the economic benefits of salmon farming in the Marlborough Sounds;
- ensure no overall increase in the total surface structure area of salmon farms in the Marlborough Sounds.

The proposal recognises the need to use coastal space more efficiently. It provides for industry growth through more efficient use of marine farming space, rather than by creating additional new space.

### 4.2 FEATURES OF THE PROPOSAL

The proposal would make recommendations to amend the Marlborough Sounds Resource Management Plan to provide a consent process for the relocation of up to six existing lower-flow salmon farms to higher-flow sites in the Marlborough Sounds (Table 1). Of the six lower-flow sites, the two consented sites at Crail Bay that are not currently under production are the lowest priority for relocation, and would only be relocated if consultation suggested that sufficient potential relocation sites were available.

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. High level summaries of the results of these investigations are set out in **Part 5** of this document. These effects will also be assessed through consultation. The more detailed Summary Assessment of Environmental Effects and the full technical reports can be viewed at <http://www.mpi.govt.nz/news-and-resources/consultations>.



**Table 1: Existing lower-flow sites and potential relocation sites**

<b>Existing lower-flow farms</b>	
Ruakaka Bay	<i>Tōtaranui/Queen Charlotte Sound</i>
Otanerau	<i>Tōtaranui/Queen Charlotte Sound</i>
Waihinau Bay	<i>Te Hoiere/Pelorus Sound</i>
Forsyth Bay	<i>Te Hoiere/Pelorus Sound</i>
Crail Bay MFL48	<i>Te Hoiere/Pelorus Sound</i>
Crail Bay MFL32	<i>Te Hoiere/Pelorus Sound</i>
<b>Potential relocation sites</b>	
Blowhole Point North	<i>Te Hoiere/Pelorus Sound</i>
Blowhole Point South	<i>Te Hoiere/Pelorus Sound</i>
Waitata Mid-Channel	<i>Te Hoiere/Pelorus Sound</i>
Richmond Bay South	<i>Te Hoiere/Pelorus Sound</i>
Horseshoe Bay	<i>Te Hoiere/Pelorus Sound</i>
Tio Point	<i>Kura Te Au/Tory Channel</i>

Refer to Map 1 and 2 for the location of each site. Note that the potential relocation sites are not listed in order or priority for relocation.

If relocation is to proceed, the Marlborough Sounds Resource Management Plan would be amended to provide a consent pathway for relocation of existing lower-flow sites to higher-flow sites. Specific amendments that could potentially be made are outlined in Part 3 of this document.

To amend the Marlborough Sounds Resource Management Plan, the Minister for Primary Industries would recommend making regulations under section 360A of the Resource Management Act. This provision gives the Governor-General the power, by Order in Council, to amend provisions in a regional coastal plan relating to the management of aquaculture activities in the coastal marine area.

If the Marlborough Sounds Resource Management Plan is amended, King Salmon could then submit a series of resource consent applications to enable it to relocate the farms.

The potential amendments to the Marlborough Sounds Resource Management Plan prescribe how these resource consents would be processed, and is discussed in the “Potential amendments to Marlborough Sounds Resource Management Plan” section below.

#### 4.2.1 Site swap scenarios

Details of site swap scenarios (i.e. swapping specific lower-flow farms to specific higher-flow sites) have not been determined. The Minister for Primary Industries is interested in obtaining your views about the existing sites and the potential relocation sites to help inform any final decision. Following consultation, the Minister for Primary Industries will

receive a written report and recommendations from the Marlborough Sounds Farm Relocation Advisory Panel (made up of three resource management experts) on the comments received. The Ministry for Primary Industries will also provide advice to the Minister on how it thinks he should proceed. For example, because the potential relocation sites would be more productive, it might be possible to swap two of the lower flow sites for one of the higher flow sites. This would mean a reduction in the number of salmon farms in the Marlborough Sounds.<sup>17</sup>

The potential relocation sites have been carefully selected. The Ministry for Primary Industries assessed a number of sites within the Marlborough Sounds using environmental, bio-physical, hydrological, fisheries and landscape/natural character information to find suitable salmon farming space. This process revealed that additional space for aquaculture is very limited.

The relocation sites would allow farming within the Benthic Guidelines at a viable level of production that continues to deliver significant benefits to the community. Due to the characteristics of the potential sites, farm productivity may be increased over time while remaining within the limits required under the Benthic Guidelines. This would have economic benefits including creating jobs. These benefits are described in **Part 5**.

Based on public feedback, the Minister for Primary Industries will be able to further assess what impacts the potential relocation sites would have.

The proposal would not result in any increase in the total structure area (sea pens and barges) on the water's surface which is currently nine hectares. Because the water is deeper and faster flowing at the potential sites, the anchors would extend further away from the farms, resulting in an increase in the total consented area.

#### 4.2.2 Resource consents will continue to be required

If, following consultation and further evaluation, the Marlborough Sounds Resource Management Plan is amended to enable an agreed relocation plan, King Salmon would still need to apply for resource consents at the relocation sites. An Undue Adverse Effects test under the Fisheries Act 1996 would still be undertaken by the Ministry for Primary Industries to determine whether a potential farm would unduly adversely affect customary, recreational or commercial fishing. The potential farm must satisfy this test before it can proceed.

#### 4.2.3 Implications of not relocating lower-flow salmon farms

Retaining lower-flow salmon farms at their existing sites would mean no changes to the Marlborough Sounds Resource Management Plan are required, and the Minister for Primary Industries would not exercise the regulation-making power.

King Salmon is still committed to work with the Marlborough District Council to implement the Benthic Guidelines across all its farms. King Salmon would voluntarily adjust its

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<sup>17</sup> Because of the higher water flows the potential sites can generally cope with a larger feed discharge, without causing significant environmental effects or leading to non-compliance with the Benthic Guidelines or resource consent conditions.

operations over the remaining term of the existing resource consents for the lower-flow sites and potentially change the use of Forsyth Bay and Waihinu Bay farms to grow smolt.

However, implementing the Benthic Guidelines would be challenging at the lower-flow sites and would initially require destocking and fallowing for two to five years to allow the seabed to recover before recommencing production at lower stocking levels. Over the fallowing period, approximately \$10 million GDP per annum and 105 FTEs would be lost.

Recommencing production at lower stocking levels to meet the Benthic Guidelines is estimated to result in up to four operational lower-flow sites becoming commercially unviable. This is estimated to result in an ongoing loss of between \$3.6 million and \$10 million per year and between 38 and 105 FTEs. The economic analysis is discussed in more detail in **Part 5**.

Other implications of not relocating farms are:

- salmon production from any remaining lower-flow farms would decline as the Benthic Guidelines are fully implemented (resulting in loss of regional value added and employment).
- some active farms would remain near communities causing adverse social effects.
- inability to deliver environmental benefits such as improved salmon health and reduced biosecurity risk that could be achieved through relocation to higher-flow sites.

#### 4.2.4 Adaptive management

Under the current Marlborough Sounds Resource Management Plan, existing salmon farms must be developed following a careful process of gradual steps (staged adaptive management) to increase feed levels which determines fish production. This would apply to any farms that are relocated. Each step would be subject to monitoring and feedback loops to ensure that significant adverse effects on water quality, benthic habitat and other matters of importance were not occurring. Adaptive management approaches developed to date have included:

- the comprehensive approach outlined in the resource consent conditions for the three sites granted (Kopaua, Waitata and Ngamahau) by the Environmental Protection Authority Board of Inquiry and confirmed by the Supreme Court in 2014;
- a modified version of that approach contained in resource consent conditions for the Te Pangu site issued in January 2016 and resource consent conditions for Clay Point issued in November 2016;
- the approach outlined in the Benthic Guidelines.

A key aspect of the proposal is that all relocated farms would be developed under a staged adaptive management approach. The potential changes to the Marlborough Sounds Resource Management Plan prescribe this approach and is outlined in Appendix 1. This is based on the three approaches outlined above.

In addition, the Ministry for Primary Industries, Marlborough District Council, King Salmon, iwi and the community will work together to develop water quality guidelines to apply to

salmon farming throughout the Marlborough Sounds (equivalent to the Benthic Guidelines). It is anticipated that the staged adaptive management approach would then give effect to these water quality guidelines.

The potential amendments to the Marlborough Sounds Resource Management Plan would require King Salmon to provide advanced real-time monitoring buoys to ensure cumulative water quality effects are appropriately monitored and managed. In addition to providing greater confidence in salmon farm management practices, these buoys would support improved state of the environment monitoring of the wider Marlborough Sounds benefiting all users. Government is working closely with Marlborough District Council to ensure improved state of the environment monitoring is achieved.

#### 4.2.5 Potential outcomes from this proposal

There are three potential outcomes from this proposal. The first outcome is all existing lower-flow farms are relocated<sup>18</sup> to the higher-flow sites. The second outcome is a combination of relocating some existing lower-flow sites to higher-flow sites, while others remain in their present location. The third outcome is all existing lower-flow farms remain at their present location.

The Minister for Primary Industries may choose one of three options:

- a. Recommend regulations to enable relocation of all six farms, provided resource consents are granted
- b. Recommend regulations to enable relocation of one to five farms, provided resource consents are granted
- c. Not recommend regulations.

If the Minister does not recommend regulations, the farms would stay at their existing sites. King Salmon will have to implement the Benthic Guidelines if consents are renewed when they expire in 2021 (one farm) to 2024 (five farms). This would require them to reduce feed discharges or destock in order to meet the Benthic Guidelines. If consents are not renewed, salmon farming at these sites would cease and all salmon farming gear and equipment would be removed.

### 4.3 EXISTING REGULATORY FRAMEWORK

Key components of the existing regulatory framework that governs salmon farming in the Marlborough Sounds are the:

- Resource Management Act 1991;
- New Zealand Coastal Policy Statement 2010;
- Marlborough Regional Policy Statement 1995;
- Marlborough Sounds Resource Management Plan 2003.

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<sup>18</sup> The plan change process is the first step in relocation and must be followed by an application for resource consent. If a consent is granted, the Ministry for Primary Industries will undertake an aquaculture decision under the Fisheries Act 1996 to determine whether the proposed activity would have an undue adverse effect on customary, recreational or commercial fishing. The proposal must satisfy this test before relocation occurs.



An analysis of the proposal against the requirements of each component of the regulatory framework is contained in the Summary Assessment of Environmental Effects, based on the information provided in the technical reports.

#### 4.3.1 Resource Management Act 1991

The Resource Management Act provides the legislative framework for regional coastal plans. Key parts of the Resource Management Act relevant to the proposal are Part 2, Part 5, and Part 7A.

Part 2 sets out the purpose and principles of the Resource Management Act. The purpose of the Resource Management Act (section 5) is to promote the sustainable management of natural and physical resources. Sections 6 to 8 of the Resource Management Act set out matters that all persons exercising functions and powers under the Resource Management Act must recognise and provide for, have particular regard to, and take into account.

Section 6 requires matters of national importance to be recognised and provided for, including:

- preservation of the natural character of the coastal environment (section 6(a));
- protection of outstanding natural features and landscapes (section 6(b));
- protection of significant habitats of indigenous fauna (section 6(c));
- maintenance and enhancement of public access to and along the coastal marine area (section 6(d));
- the relationship of Māori and their culture and traditions with ancestral lands, water, sites, wāhi tapu and other taonga (section 6(e));
- protection of historic heritage (section 6(f)).

Section 7 requires particular regard to other matters, a number of which are relevant to salmon farming in the Marlborough Sounds, while Section 8 requires all persons exercising functions and powers under the Resource Management Act to take into account the principles of the Treaty of Waitangi.

Part 5 outlines the requirements for regional coastal plans. Any amendment to the Marlborough Sounds Resource Management Plan would need to be consistent with the requirements of this Part of the Resource Management Act.

Part 7A outlines provisions relating to the occupation of the common marine and coastal area and allocation of space. The potential amendments to the Marlborough Sounds Resource Management Plan attached as Appendix 1 include a new allocation rule that has been drafted under Part 7A of the Resource Management Act.

#### 4.3.2 New Zealand Coastal Policy Statement

The New Zealand Coastal Policy Statement sets objectives and policies to achieve the purpose of the Resource Management Act in relation to the coastal environment of New Zealand. Councils are required to give effect to these policies in their plans, and consent authorities must have regard to them when considering applications. Before the Minister recommends the making of the regulation he must be satisfied that the Marlborough Sounds

Resource Management Plan (as amended by the regulations) will continue to give effect to the New Zealand Coastal Policy Statement.

A number of these policies are relevant to aquaculture, including:

- Policy 3 proposes the adoption of the precautionary approach;
- Policy 7 requires strategic planning and the identification of areas in the coastal environment where particular activities may or may not be appropriate;
- Policy 8 specifically recognises the importance of aquaculture and requires that areas appropriate for aquaculture be identified;
- Policy 11 provides for the protection of indigenous biological diversity in the coastal environment;
- Policy 12 provides for the control of activities which could result in the release or spread of harmful aquatic organisms;
- Policy 13 provides for the preservation of natural character in the coastal environment, protecting it from inappropriate subdivision, use and development;
- Policy 15 relates to protecting natural features and landscapes of the coastal environment from inappropriate subdivision, use and development.

#### 4.3.3 Marlborough Regional Policy Statement

The Marlborough Regional Policy Statement provides a community-based vision and direction for the management of the natural and physical resources of Marlborough. Relevant to salmon farming in the Marlborough Sounds, the Marlborough Regional Policy Statement contains policies and objectives relating to:

- coastal marine water quality – maintaining water quality in the coastal marine area;
- coastal marine habitat – maintaining or enhancing natural species diversity and the integrity of marine habitat;
- quality of life – maintaining and enhancing the quality of life for people in Marlborough while ensuring activities do not adversely affect the environment, and promoting the enhancement of amenity values;
- provision for activities – allowing use, development and protection of resources, provided any adverse effects of activities are avoided, remedied or mitigated, and ensuring subdivision, use and development of the coastal environment occurs in a sustainable way;
- cultural and heritage values – retaining buildings, sites and locations identified as having significant cultural or heritage values for the continued benefit of the community;
- visual character – maintaining and enhancing the visual character of the indigenous, working and built landscapes.

#### 4.3.4 Marlborough Sounds Resource Management Plan

The Marlborough Sounds Resource Management Plan governs resource use under the Resource Management Act in the Marlborough Sounds and is the operative regional coastal plan for the Marlborough Sounds. The Plan presently divides the Marlborough Sounds into three Coastal Marine Zones (CMZs):

- (i) CMZ 1, which makes up about 80 percent of the Marlborough Sounds, recognises the natural landscape and environment that contributes to the region's culture, heritage and tourism. CMZ 1 generally prohibits aquaculture as part of the approach to ensure that allocation of coastal space for private use does not occur at the expense of public access and recreation values. There are however, 22 marine farm consents in CMZ 1, comprising farms that existed before CMZ 1 came into force when the Marlborough Sounds Resource Management Plan became operative.
- (ii) CMZ 2 recognises the productive value of aquaculture to the region, and allows applications to be made for marine farming under a range of activity statuses, depending on factors such as when the farm was originally consented and its location relative to the shore. There are approximately 558 marine farms within CMZ 2.
- (iii) CMZ 3 was created specifically for the three salmon farms approved by the Environmental Protection Authority in 2013, and are the only farms in this zone. These sites were previously CMZ 1. Salmon farming within CMZ 3 is a discretionary activity, provided that it complies with standards specified in the plan.

Like the Marlborough Regional Policy Statement, the Marlborough Sounds Resource Management Plan also contains a series of objectives and policies that are relevant to the management of the coastal marine area in the Marlborough Sounds, and to salmon farming.

#### 4.3.5 Proposed Marlborough Environment Plan

The Marlborough District Council has reviewed the Marlborough Regional Policy Statement, the Marlborough Sounds Resource Management Plan and the Wairau/Awatere Resource Management Plan to create a single resource management document for the district, known as the Marlborough Environment Plan. The Marlborough District Council publicly notified the proposed plan in June 2016.

By combining the various resource management policy statements and plans required by the Resource Management Act, Marlborough will have a single planning document enabling the integrated management of all the region's natural and physical resources.

The proposed Marlborough Environment Plan does not include the provisions regulating marine farming, which are still subject to review. However, the plan does contain other provisions that are relevant to marine farming, such as identification of areas of landscape values and ecological value.

If regulations are made to enable relocation, the existing plan (the Marlborough Sounds Resource Management Plan) would be amended. Marlborough District Council would then need to decide how to incorporate the change into the proposed Marlborough Environment Plan.



# **Part 3: Potential amendments to Marlborough Sounds Resource Management Plan: What would the amendments do?**





## 5 Part 3: Potential amendments to Marlborough Sounds Resource Management Plan: What would the amendments do?

Section 360A of the Resource Management Act enables the Minister for Primary Industries to recommend regulations that amend regional coastal plans in relation to aquaculture. These provisions provide a streamlined alternative to a plan change under Schedule 1 of the Resource Management Act. King Salmon would still need to apply for resource consents.

A number of the potential relocation sites are located either wholly or partly within CMZ 1 under the Marlborough Sounds Resource Management Plan, where new marine farms are prohibited (see Table 6). Changes to adjust the zoning would be required to the Marlborough Sounds Resource Management Plan to enable existing lower-flow salmon farms to be relocated to the potential higher-flow sites.

The proposed regulations would make changes to the Marlborough Sounds Resource Management Plan. A potential set of changes have been drafted and are set out in Appendix 1. The potential changes and explanatory material are also included in the Summary Assessment of Environmental Effects <http://www.mpi.govt.nz/news-and-resources/consultations>.

The regulations would amend the Marlborough Sounds Resource Management Plan to:

1. Amend the zoning at the potential relocation areas to CMZ 4 (a new zone identified for the potential relocation proposal in the Marlborough Sounds Resource Management Plan), which would allow applications for resource consents to be made to the Marlborough District Council to establish salmon farms at specific relocation sites.
2. Include rules and policies to ensure that:
  - resource consent applicants for relocation sites must surrender resource consents for an existing lower-flow salmon farm site;
  - the transition results in no increase in total surface structure area of salmon farms;
  - a priority order for relocating existing lower-flow sites to higher-flow sites is followed
  - water quality outcomes continue to be achieved.
3. Create a new rule to require that salmon farming on the potential relocation sites would become a restricted discretionary activity, provided that:
  - Detailed standards and requirements are met, including requirements to only use feed levels that meet the Benthic Guidelines. These standards and requirements are designed to manage the general effects of salmon farming. The proposal draws on the 2013 Board of Inquiry decision on applications for resource consents for salmon farming in the Marlborough



Sounds and recent conditions imposed on existing higher-flow salmon farms (such as the Te Pangu and Clay Point sites in Tory Channel).

- Only applicants who can surrender an equivalent area of surface structures at specific existing farm sites that are currently fully consented<sup>19</sup> for salmon farming within the Marlborough Sounds can apply for consents at the potential relocation sites. This would ensure relocation would not increase the overall surface structure area of salmon farms (i.e. limited to the 9 hectares currently consented).
  - Farms are built with less visually intrusive structures, painted in dark, recessive colours.
  - Staged adaptive management was implemented, with detailed monitoring and reporting conditions complied with. Development of water quality standards would begin this year to inform adaptive management, although initial water quality standards are specified in the rule.
  - A series of management plans (for example in relation to marine mammals and sharks, and biosecurity management) are developed, implemented and complied with.
  - Consent applications under this rule would not be publicly notified, but Marlborough District Council would have the discretion to give limited notification to any affected person if written approval of the person cannot be obtained.
4. Prohibit aquaculture at five of the surrendered sites (Ruakaka Bay, Otanerau, Waihinu Bay, Forsyth Bay and Crail Bay MFL48).
  5. At one of the existing lower flow sites in Crail Bay (MFL32) there is multiple ownership; King Salmon holds consents for salmon farming, and another consent holder holds a consent for mussel farming. If the salmon farm is relocated from this site, only finfish farming would be prohibited to ensure that existing mussel farming operations could continue.
  6. Include rules in the new CMZ 4 to allow existing mussel farms at Blowhole Point South and Horseshoe Bay to apply for replacement resource consents in the same way that they can now.
  7. Include rules to prohibit new aquaculture other than salmon farming in CMZ 4.

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?

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

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<sup>19</sup> Meaning that consents are held for both occupation of the coastal marine area and for discharges of feed.

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?

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?

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

Q12. Is there any wording you agree or do not agree with in the proposed regulations?

## **Part 4: Existing and potential sites**



## 6 Part 4: Existing and potential sites

### 6.1 SUMMARY OF EXISTING SITES BEING CONSIDERED FOR RELOCATION

**Table 2: Environmental, operational characteristics and structures of existing lower-flow sites.**

Site name	Locality	Average mid-water current (centimetres per second) <sup>20</sup>	Temperature (°C) <sup>21</sup>	Depth (metres) <sup>22</sup>	Max surface structure area (hectares)	Consented area (hectares) <sup>23</sup>	Consented for barge?	Pen type	Are there neighbouring mussel farms?	Current status
Ruakaka Bay	Queen Charlotte Sound (CMZ 1)	3.7	~11-18 (peaks of up to 20)	34-35	2	11.3	Yes	Steel/ Rectangular	No	Operational and currently active
Otanerau	Outer Queen Charlotte Sound (CMZ 2)	6	~11.5-18 (but can exceed 18 for an extended period)	37-39	2	10.8	Yes	Steel/ Rectangular	West of farm	Operational and currently active
Forsyth Bay	Outer Pelorus Sound (CMZ 2)	3.1	~12-17.5 (can exceed 18 for an extended period)	30-32	2	6	Yes (currently absent) Yes	Steel/ Rectangular	Surrounded by three mussel farms	Operational but currently fallow
Waihinau Bay	Outer Pelorus Sound (CMZ 2)	8.4	~12-17.5 (can exceed 18 for an extended period)	28-30	2	8	Yes	Steel/ Rectangular	East of farm	Operational but currently fallow
Crail Bay MFL48	Pelorus Sound (CMZ 2)	2.5-3.5	11-20	19-31	.5	5.1	Yes (currently absent)	Plastic circle/Steel pens (currently absent)	Both sides of farm and on MFL48 site	Non-operational
Crail Bay MFL32	Pelorus Sound (CMZ 2)	2.5	11-20	19-31	.5	7.8	Not specifically	Plastic circle (currently absent)	Both sides of farm and within same site	Non-operational
<b>TOTAL</b>					9	49				

<sup>20</sup> NZ King Salmon (2016) Operational Plan

<sup>21</sup> NZ King Salmon (2016) Operational Plan

<sup>22</sup> NZ King Salmon (2016) Operational Plan

<sup>23</sup> NZ King Salmon (2016) Seafarm Register



### **6.1.1 Ruakaka Bay – Tōtaranui/Queen Charlotte Sound**

The Ruakaka Bay farm, in Queen Charlotte Sound was established in 1985 by the South Island Salmon Partnership (the precursor to Regal Salmon) as a small research-based farm. It is located on the site of the first registered mussel farm in New Zealand. The site, the oldest of King Salmon's farms, is characterised by water depths of around 35 metres and low-current flows (average mid-water current speed 3.7 centimetres/second). Salmon are raised in up to 20 steel net pens (20 metres x 20 metres) and the site currently produces approximately 1000 tonnes of salmon per annum.

### **6.1.2 Otanerau – Tōtaranui/Queen Charlotte Sound**

Prior to considering Kura Te Au/Tory Channel as a safe place to locate salmon net pens, Regal Salmon obtained a salmon farming permit in Otanerau Bay, the southern extension of East Bay in the north of Arapawa Island. The site was developed in late 1989 and is adjacent to a number of mussel farms. Water depth at this site ranges from 37 metres to 39 metres and current flows are characterised as "low" (average mid-water current speed 6 centimetres/second). Due to the consistently warmer temperatures in summer, salmon are only grown on this site for nine months of the year (April to January). In 2009, Otanerau was significantly reduced in size with a number of net pens removed from the farm and shifted to other King Salmon sites. Currently, Otanerau has an annual harvest of approximately 800 tonnes of salmon, which are grown in 12 steel net pens (20 metres x 20 metres).

### **6.1.3 Forsyth Bay – Te Hoiere/Pelorus Sound**

The farm at Forsyth Bay was originally a mussel farm and was later developed by Southern Ocean Seafoods in 1994. Water depths at the site are around 35 metres, and water currents are classified as "low" (average mid-water current speed 3.1 centimetres/second). The site is currently fallowed (since January 2016) and has no structures on it. When in use, salmon were raised in up to 24 steel net pens (20 metres x 20 metres), but this can vary depending on pen dimensions and production requirements. The site, operated in conjunction with the Waihinu Bay farm produced approximately 1300 tonnes of salmon annually.

### **6.1.4 Waihinu Bay – Te Hoiere/Pelorus Sound**

The Waihinu Bay farm was originally located in Hallam Cove, until the then owners Newhaven Salmon Company moved to Waihinu Bay in 1989/90. Water depth at the site ranges from 28 metres to 30 metres, and water flow is categorised as "low" to "moderate" (average mid-water current speed 8.4 centimetres/second). Currently, the Waihinu Bay farm site is fallowed (since October 2015) with anticipated use as a smolt farm in 2017. When in use, salmon are raised in up to 24 steel net pens (20 metres x 20 metres), but this can vary depending on pen dimensions and production requirements. The site, operated in conjunction with the Forsyth Bay farm, produced approximately 1300 tonnes of salmon annually.

### 6.1.5 Crail Bay – Te Hoiere/Pelorus Sound

King Salmon purchased the two Crail Bay sites (MFL48 and MFL32) in 2011 and has since destocked both sites in December 2011 because they are not well suited to salmon farming and have a limited production ability. The two sites are located in water depths ranging from 19 metres to 31 metres, with low-current flows described below. The MFL48 and MFL32 sites are unusual as salmon farming has been conducted alongside mussel farming within the same lease.

The more northern site (MFL48) is currently fallowed. Water flow is categorised as “low” (average mid-water current speed 2.5 to 3.5 centimetres/second). This farm site was established as a salmon farm in 2010 and re-consented in 2014. The recent resource consent (2014) provides for plastic circles or steel pens; additionally as an alternative the consent allowing for mussel lines was retained. It is located approximately 430 metres from MFL32.

The southern site (MFL32) has mussel lines only. Water flow is categorised as “low” (average mid-water current speed 2.5 centimetres/second). This farm site has been trialling finfish culture since 2003, and commercial salmon farming began in 2006.

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

## 6.2 COMPLIANCE WITH BENTHIC GUIDELINES

The Benthic Guidelines were finalised in November 2014, but have yet to be implemented in full. The Benthic Guidelines have been applied to the existing Te Pangu and Clay Point farms.

Monitoring of benthic effects beneath King Salmon’s farms since 2012 has indicated that while the Otanerau, Ruakaka Bay, Waihinu Bay and Forsyth Bay farms comply with their existing consent requirements, it is likely that decreases in feed levels would be necessary to meet the standards specified in the Benthic Guidelines (Table 3). The same situation applies at one of the two Crail Bay sites, although salmon have not been farmed at these sites since 2011. At the other Crail Bay site, farming may be possible within the existing consented feed limits and might comply with the Benthic Guidelines.

**Table 3: Compliance with the Benthic Guidelines, recent feed levels and predicted feed levels of existing lower-flow sites.**

Site name	Current consented feed level (tonnes) <sup>24</sup>	Average historic feed level (tonnes) per year (range 2005-2015) <sup>25</sup>	Number of years ES5 exceeded in last four years <sup>26</sup>	Predicted feed level per year to comply with ES5 (tonnes) <sup>27</sup>
Ruakaka Bay	4000	1700	3	600–1500
Otanerau	4000	1700	4	500–1500
Forsyth Bay <sup>28</sup>	4000	2500 (600-3800)	3	1000–2000
Waihinu Bay <sup>29</sup>	3000	1800 (0-3300)	2	1000–2000
Crail Bay MFL <sup>48</sup>	960	20	NA	500-1000
Crail Bay MFL <sup>32</sup>	1180	1300 (1000-1600)	NA	500-1000
<b>TOTAL</b>	17140	9020 (6820-12120)		4100-9000

The Benthic Guidelines are not currently imposed as resource consent conditions on the existing lower-flow sites. These consents expire in 2021 to 2024. It is anticipated the Marlborough District Council will incorporate the environmental quality standards into consent conditions at the time of re-consenting. King Salmon has undertaken to adopt the Benthic Guidelines across all sites prior to this time.

### 6.3 OPTIONS FOR SALMON FARMING IN MARLBOROUGH SOUNDS TO COMPLY WITH THE BENTHIC GUIDELINES

Seven options were considered by the Working Group for salmon farming in the Marlborough Sounds for lower-flow farms to comply with the Benthic Guidelines (Table 4). The only viable options at the present time with current technology are reducing stocking levels (and associated feed levels) at the existing lower-flow farms or relocating the farms to higher-flow sites.

The other five options - waste capture, seabed remediation, improving feed efficiency, land-based aquaculture and offshore farming - are not currently viable if farms are to meet the Benthic Guidelines. However, they could have potential for the future. The following table sets out the current assessment of these options and how they could be taken forward.

<sup>24</sup> In the last four years, the feed discharge at Ruakaka, Otanerau, Waihinu and Forsyth has not approached the consented level. There has been no feed discharge at the Crail Bay sites as the sites have been fallow since 2011.

<sup>25</sup> Keeley, N. Taylor, D (2016). Assessment of Sustainable Feed levels at Low Flow Farms to Comply with BMP-Benthic Guidelines. Cawthron Institute. Report ID: 1641.

<sup>26</sup> Cawthron Institute monitoring reports from 2012 to 2015

<sup>27</sup> Keeley, N. Taylor, D (2016). Assessment of Sustainable Feed levels at Low Flow Farms to Comply with BMP-Benthic Guidelines. Cawthron Institute. Report ID: 1641.

Note, the predicted feed level per year to comply with ES5 is a range due to uncertainty around what is required for sites to recover from deposition, and site-specific reactions to deposition.

<sup>28</sup> Operations alternate between Forsyth Bay and Waihinu Bay.

<sup>29</sup> Operations alternate between Forsyth Bay and Waihinu Bay.

**Table 4: Summary of options to implement the Benthic Guidelines**

Option	Summary
Reducing stocking levels (and associated feed levels) at existing lower-flow farms	<p>Nutrient enrichment of the seabed is the direct result of deposition of fish faeces with minor amounts of uneaten food. Reducing stocking levels within sea pens reduces the amount of feed required, and hence leads to an eventual reduction in seabed enrichment.</p> <p>Reducing stocking levels (and associated feed levels) at lower-flow sites can be undertaken by King Salmon without any intervention in the planning framework. However, reducing stocking levels at existing lower-flow farms to meet ES5 would have a significant effect on fish production and economic farm viability (returns and jobs).<sup>30</sup> Reducing stocking levels would also not fully resolve the environmental<sup>31</sup>, fish health and biosecurity issues at lower-flow sites, and would not address issues at sites such as Ruakaka Bay where it is surrounded by important landscape values.</p>
Waste capture	<p>There is ongoing international research to develop technology to capture wastes before they fall onto the seabed.<sup>32</sup> There is the potential to use this waste for secondary uses such as fertilisers and methane production. However, the technology is still unproven at a scale to match the existing marine-based farms and requires further research.</p>
Seabed remediation	<p>There is growing local<sup>33</sup> and international<sup>34</sup> research to explore ways to remediate seabed conditions directly underneath and adjacent to salmon farms. One option involves removal of the upper layer of the seabed for disposal on land and pumping oxygen into the seabed. Site remediation may improve ecological outcomes by accelerating seabed recovery. This approach could be used in conjunction with fallowing and relocation.</p> <p>Currently, there is insufficient evidence that site remediation provides better long-term recovery outcomes than leaving the seabed to recover naturally. There is work underway on seabed remediation in the Marlborough Sounds to enable an ongoing process of environmental improvement.</p>

<sup>30</sup> PwC (2016). Marlborough Salmon Relocation – Economic Impact Assessment

<sup>31</sup> Keely, N. Taylor, DI (2016). Assessment of sustainable feed levels at low flow farms to comply with BMP-Benthic Guidelines. Cawthron Institute.

<sup>32</sup> Kenny, B (2016). Feasibility Study – Salmon farm waste capture in New Zealand. SRSL.

<sup>33</sup> Keeley, N. Taylor, DI (2015). Seabed remediation pilot study: final report. Prepared for Seafood Innovations Ltd. Cawthron Report No. 2696. 34p plus appendices.

<sup>34</sup> O'Connor B, Costellow J, Dinneen P, Faull J (1993). The effect of harrowing on sediment quality under a salmon farm on the west coast of Ireland. ICES 19: 1-16; Vezzulli L, Pruzzo C, Fabiano M (2004). Response of the bacterial community to in situ bioremediation of organic-rich sediments. Marine Pollution Bulletin 49: 740-751; Eriksen R, Macleod C, Ross J (2012). Evaluation of approaches to improve sediment remediation (rate and function) under salmonid fish cages. Institute for Marine and Antarctic Sciences, Hobart, Tasmania, 1, 2010/063.



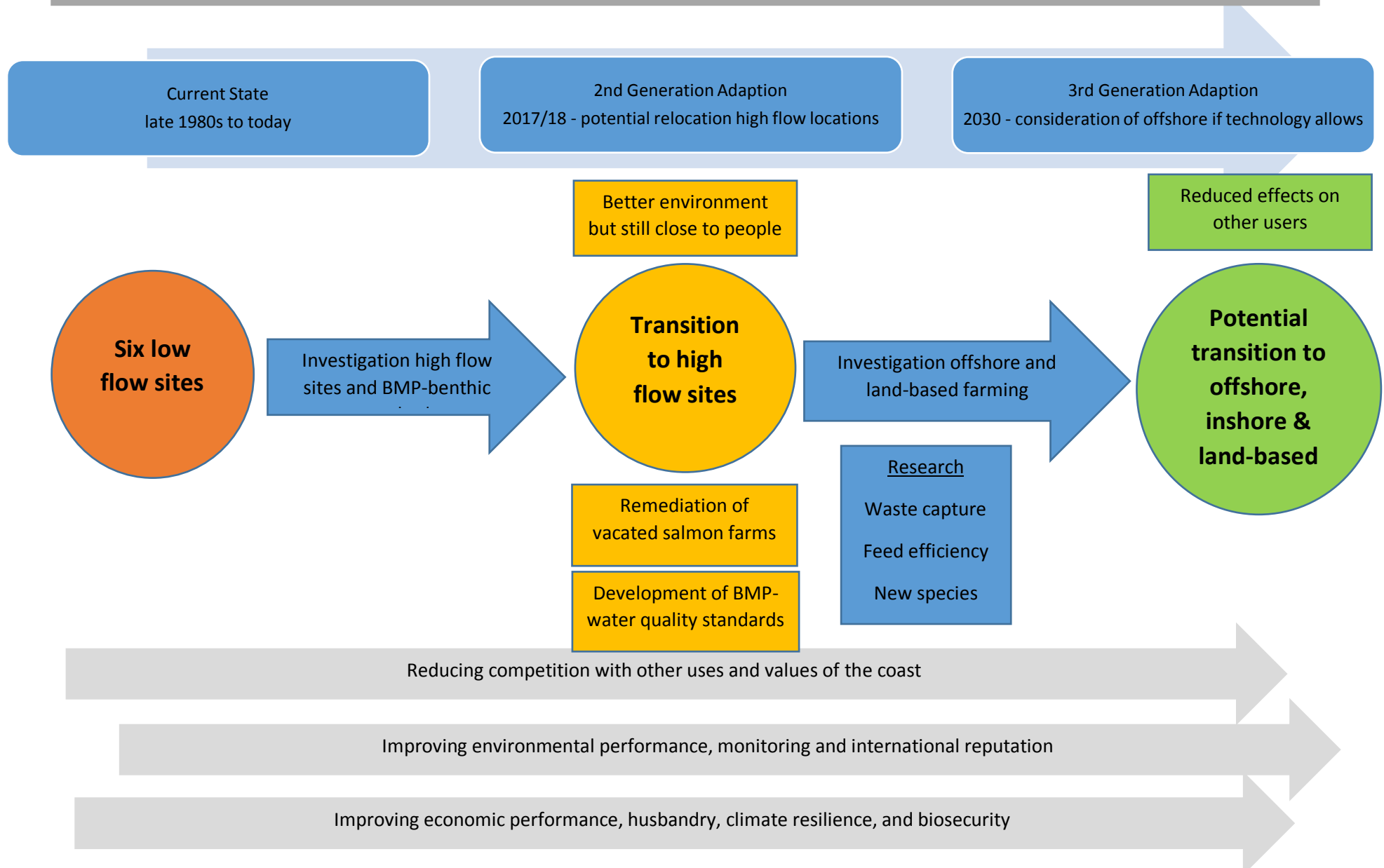
Option	Summary
Improving feed efficiency	Nutrient discharges from salmon farms are largely determined by the efficiency with which fish metabolise feed. Improving feed efficiency can lead to better ecological outcomes through adjustments in feed composition. This has the potential to reduce nutrient input to the seabed by up to 20 percent. <sup>35</sup> The Cawthron Institute is to investigate improvements in feed efficiency over the next five years and improvements of up to 5 to 10 percent are possible over this time. Commercial fish feed producers are constantly researching ways to improve fish feeds; but, efficiency gains are difficult to achieve and will take time to be realised.
Land-based aquaculture	Technology is well developed to grow salmon within a land-based farming environment using flow through or recirculation of freshwater or seawater. However, the economic viability of this option is largely determined by the availability of sufficient land and water resources, and has higher risks. Existing land-based salmon farms in New Zealand are small scale and produce relatively small volumes of fish. It is currently not logistically possible to shift the production to land-based operations at existing production levels.
Offshore farming	Given competing users and values in the coastal environment, offshore farming has become an emerging approach to marine farming internationally. Offshore farms are located in deeper and less sheltered waters with stronger currents. However, New Zealand waters are prone to much greater wave extremes than many other locations where offshore farming has proven viable. More research is required to develop offshore technology that can withstand New Zealand's higher energy locations and provide confidence to any future investor. While offshore farming is an attractive option in concept, technology is not available yet at a commercial scale or level of engineering robustness required for New Zealand conditions.
Farm relocation	Relocating existing salmon farms to appropriate higher-flow sites can lead to a range of ecological, cultural, social and economic benefits. Relocation would require intervention in the planning framework and will enable former lower-flow sites to be commercially viable and comply with the Benthic Guidelines. Moving farms to higher-flow sites can reduce seabed and water quality effects, improve fish health, resilience and husbandry, improve biosecurity management, and enable better monitoring and adaptive management, and may lead to an

<sup>35</sup> Wybourne, B (2012). Brief of Evidence of Ben Armour Wybourne in Relation to Feed Discharge for the New Zealand King Salmon Co. Ltd.

Option	Summary
	increase in production. Farming salmon in more remote sites may also be more acceptable to the community than existing lower-flow salmon farms

Figure 2 sets out a vision on how the options discussed above could be incorporated in future planning and decisions.

Figure 2: Conceptual framework for developing a vision for salmon farming in Marlborough



## 6.4 PRIORITY OF SITE RELOCATIONS

The relocation of six lower-flow farms to higher-flow sites will allow for the better management of the effects of farming. However, some of these farms have a higher priority for relocation than others. An initial indication of priority is outlined in Table 5 below.

There is only one potential relocation site in Tory Channel (Tio Point), but there are two existing lower-flow farms in Queen Charlotte Sound (Otanerau and Ruakaka Bay).

This means that one of these two farms would be relocated into Pelorus Sound, if relocation proceeds.

**Table 5: Priority of existing lower-flow sites for relocation**

Priorit y	Existing Site	Comment
1	Ruakaka Bay	Ruakaka Bay is located in an area of significant natural values within CMZ 1. The site would also struggle to comply with the Benthic Guidelines.
2	Otanerau	Otanerau is a farm with one of the greatest seabed enrichment effects. Otanerau is operated for only nine months of the year (due to undesirably high water temperatures in summer). This site has undesirably high enrichment state scores.
3	Waihinau Bay	Waihinau Bay is the farm with the highest water flow of the six existing farms. Nevertheless, this site would not remain commercially viable at minimum feed levels required to meet the Benthic Guidelines. Under maximum feed levels, compliance with the Benthic Guidelines is more likely as the resource consent allows sea pens to move within the consented area to better manage seabed effects. In addition the site is close to residential dwellings and its relocation would significantly improve the natural values of the area.
4	Forsyth Bay	Forsyth Bay is a farm with one of the greatest seabed enrichment effects, and has undesirably high enrichment state scores.
5	Crail Bay MFL48	The two Crail Bay sites are not currently in production, as they are not well suited to salmon farming. King Salmon could potentially use the Crail Bay sites to grow smolt. Consent was recently granted in 2014. In early discussions with community members and interested parties there has been considerable resistance to relocation of non-operational farms. The Crail Bay sites would be the lowest priority to relocate, and would proceed only if there are sufficient sites available.
6	Crail Bay MFL32	

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



## 6.5 SUMMARY OF POTENTIAL SITES FOR RELOCATION

**Table 6: Environmental characteristics and predicted feed levels of potential relocation sites**

Site name	Locality	Average mid-water current (centimetres/second) <sup>36</sup>	Temperature (°C) <sup>37</sup>	Depth (metres) <sup>38</sup>	Max surface structure area (Hectares)	Predicted feed level per year to comply with ES5 (tonnes) <sup>39</sup>	Total Consented area (hectares)	Would it be consented for a barge?	Pen type	Are there neighbouring mussel farms?
Blowhole Point North	Outer Pelorus Sound (CMZ 1)	13	11.9 – 18.2	28 – 80	1.4	4500	7.0	Yes	Plastic circle	Three adjacent mussel farms
Blowhole Point South	Outer Pelorus Sound (65% in CMZ 2, 35% in CMZ 1)	14	11.9 – 18.2	38 – 65	1.4	5000	9.9	Yes	Plastic circle	One adjacent mussel farm
Waitata Mid-Channel	Outer Pelorus Sound (CMZ 1)	24	10.7 – 18.5	61 – 64	2.3	7000	15.9	A feed receptacle only	Plastic circle	None
Richmond Bay South	Pelorus Sound (CMZ 1)	18	10.7 – 18.5	30 – 56	1.5	5000	13.7	Yes	Steel/ Rectangular	None (nearest mussel farm approx. 0.5km NE)
Horseshoe Bay	Pelorus Sound (CMZ 2)	11	10.7 – 18.5	18 – 45	0.7	1500	10.7	Yes	Steel/ Rectangular	Overlaps existing mussel farm
Tio Point	Tory Channel (70% in CMZ 2, 30% in CMZ 1)	23	13.1 – 15.9	18 – 44	0.5	1600	4.2	Yes	Steel/ Rectangular	Mussel and oyster farms within Oyster Bay
<b>TOTAL</b>					7.8	24600	61.4			

<sup>36</sup> Brown, S. Ren, J. Mackay, K. Grant, B. O'Callaghan, J (2016). Benthic Ecological Assessments for Proposed Salmon Sites Part 2: Assessment of Potential Effects. National Institute of Water & Atmospheric Research Ltd.; Clark D, Taylor D 2016. Tio Point flow data from background data used for Site assessment for potential finfish site: Oyster Bay (2014). National Institute of Water & Atmospheric Research Ltd.

<sup>37</sup> MSQP summary of depth averaged temperatures: Outer Pelorus values used for Blowhole Point North and Blowhole Point South sites; Waitata values used for Waitata Mid-channel, Richmond Bay South and Horseshoe Bay sites; Tio Point values used for the Tio Point site. Limited measurements were available (not all months sampled) for Outer Pelorus and Tio Point.

<sup>38</sup> Brown, S. Ren, J. Mackay, K. Grant, B. O'Callaghan, J (2016). Benthic Ecological Assessments for Proposed Salmon Sites Part 2: Assessment of Potential Effects. National Institute of Water & Atmospheric Research Ltd.; Clark D, Taylor D 2016. Additional Seabed Information for a finfish farm effects assessment at Tio Point, Oyster Bay, Tory Channel. Prepared for Ministry of Primary Industries. Cawthron Report No. 2882. 23 p. plus appendices.

<sup>39</sup> Brown, S. Ren, J. Mackay, K. Grant, B. O'Callaghan, J (2016). Benthic Ecological Assessments for Proposed Salmon Sites Part 2: Assessment of Potential Effects. National Institute of Water & Atmospheric Research Ltd.; Clark D, Taylor D 2016. Additional Seabed Information for a finfish farm effects assessment at Tio Point, Oyster Bay, Tory Channel. Prepared for Ministry of Primary Industries. Cawthron Report No. 2882. 23 p. plus appendices. Note that Waitata Mid-channel and Richmond Bay South are modelled to 12000 and 6500 tonnes respectively, but lower discharges are selected to manage effects on water quality.

### 6.5.1 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. The site would have a feed discharge of up to 4500 tonnes per annum. Over 80 percent of the sea pens at this site would be located in water greater than 50 metres deep.

The adjacent land is largely unmodified and comprises a main headland at the entrance to Pelorus Sound, with steep headland slopes and an abrupt rocky coastal edge. The vegetation in the area is highly modified, with large areas currently in plantation forestry and pasture. The site is not in an Area of Outstanding Landscape Values under the Marlborough Sounds Resource Management Plan, but is within an area identified as an Outstanding Natural Feature and in an area identified as Outstanding Landscape through the Proposed Marlborough Environment Plan. Three existing mussel farms occupy the coastal edge of the bay, and the sea pens would be located seawards of these.

### 6.5.2 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. The site would have a feed discharge of up to 5000 tonnes per annum. 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.

The landform is similar to the Blowhole Point North site, but drops away and narrows to a thin elongated peninsula enclosing the bay from the entrance to Port Ligar to the south of the site. The site is not in an Area of Outstanding Landscape Values under the Marlborough Sounds Resource Management Plan, but is within an area identified as an Outstanding Natural Feature and in an area identified as Outstanding Landscape through the Proposed Marlborough Environment Plan. There is an existing mussel farm in the bay, and the sea pens would overlap with part of it.

### 6.5.3 Waitata Mid-Channel – Te Hoiere/Pelorus Sound

The site is located in the middle of the channel between Waihinu Bay to the north-west and Post Office Point to the southeast. The site would have a feed discharge of up to 7000 tonnes per annum. The Waitata Mid-Channel site would have a low-profile semi-submersible feed receptacle (circular or similar in appearance and located on the north-western side of the farm; Figure 3). The site is not adjacent to any land and sits in the middle of a deep 12 kilometre-long channel that runs along the Pelorus Sound/Waitata Reach. Water depths are deep (61 to 64 metres) and the seabed is an almost flat sandy mud seabed, with only sparse marine communities present.

The site is not in an Area of Outstanding Landscape Values under the Marlborough Sounds Resource Management Plan. The Proposed Marlborough Environment Plan does not identify this site within an area identified as an Outstanding Natural Feature or Landscape. There are no mussel farms in the near vicinity of this site.

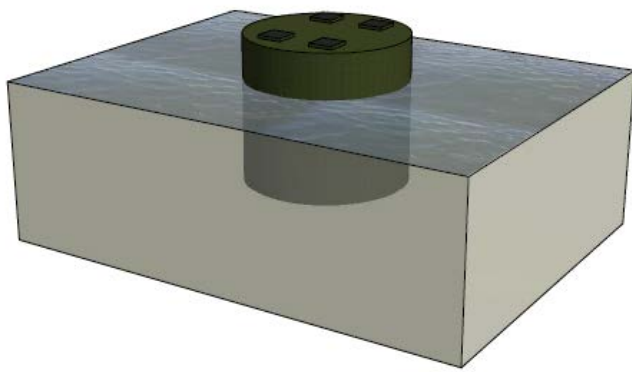


Figure 3. Feed barge concept drawing for the potential Waitata Mid-Channel site. Figure from Cuddon Ltd. (2016) General Overview. Note that moorings are not pictured in this diagram but this barge would be moored to the seafloor.

#### 6.5.4 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. A salmon farm with a potential feed discharge of up to 5000 tonnes per annum could be located at this site. The sea pens would be located in water 40 to 50 metres deep.

The land adjacent to the site is largely unmodified and has extensive areas of regenerating bush, and some low-intensity pastoral land at the top of the headland. The site is not in an Area of Outstanding Landscape Values under the Marlborough Sounds Resource Management Plan. The Proposed Marlborough Environment Plan does not identify this site within an area identified as an Outstanding Natural Feature or Landscape. A mussel farm is present adjacent to the coast below the headland to the east of the site. There is no overlap between the sites.

#### 6.5.5 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. A salmon farm with a potential feed discharge of up to 1500 tonnes per annum could be located at this site.

The headland above the site is moderately steep, coming out of a rocky coastal edge with beaches in some places. The land is unmodified with numerous gullies with regenerating indigenous vegetation. The site is not in an Area of Outstanding Landscape Values under the Marlborough Sounds Resource Management Plan. The Proposed Marlborough Environment Plan does not identify this site within an area identified as an Outstanding Natural Feature or Landscape. 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.

#### 6.5.6 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. A salmon

farm with a potential feed discharge of up to 1600 tonnes per annum could be located at this site. The sea pens would be located in water around 25 metres deep.

The land adjacent to the site comprises a rocky coastal edge with a steep indented headland of rocky coastal cliffs and bluffs. Vegetation is mainly pine forest, with some early stage regenerating coastal scrub. The site is not in an Area of Outstanding Landscape Values under the Marlborough Sounds Resource Management Plan. The Proposed Marlborough Environment Plan does not identify this site within an area identified as an Outstanding Natural Feature or Landscape. There is a resource consent for a mussel farm inshore of the site, but is not currently farmed.

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?

More detailed descriptions of each of the six potential relocation sites can be found in the landscape and benthic technical reports.

Furthermore, photo simulations of intended salmon farm structures at potential relocation sites Blowhole Point North, Blowhole Point South, and Waitata Mid-Channel are available in a report (<http://www.mpi.govt.nz/news-and-resources/consultations>). These simulations illustrate what a potential salmon farm would look at each site *in situ*.



## Part 5: Summary of potential effects





## 7 Part 5: Summary of potential effects

Each of the six potential relocation sites has been the subject of significant technical investigations. Full reports for each of these investigations are available at <http://www.mpi.govt.nz/news-and-resources/consultations>. A summary of the reports and the statutory and planning framework that would govern the potential relocation proposal is available in the Summary Assessment of Environmental Effects.

A high-level discussion of each of the technical investigations is provided below.

### 7.1 POTENTIAL CULTURAL EFFECTS

The Ministry for Primary Industries has commenced engagement with tangata whenua on the proposal through the Ministry for Primary Industries co-ordinated Te Tau Ihu Forum and the commissioning of a Cultural Impact Assessment. In addition, Ngāti Koata has prepared its own advice to input into the Cultural Impact Assessment.

Both of these documents discuss potential cultural effects as a result of the proposal. These documents are available on the Ministry for Primary Industries' website <http://www.mpi.govt.nz/news-and-resources/consultations>.

Consultation with iwi authorities and tangata whenua will continue throughout the consultation process on the proposal, and will help inform subsequent advice to the Minister.

### 7.2 POTENTIAL ECONOMIC EFFECTS

If the six existing lower-flow farms are relocated to higher-flow sites, salmon farming would be able to continue at a level of production that would both meet the Benthic Guidelines and deliver significant benefits to the Nelson and Marlborough regional economies. Due to the higher-flow and deeper water characteristics of the potential sites, salmon production may be increased while remaining within the environmental limits in the Benthic Guidelines, which would have economic benefits. Conversely, farming at the existing lower-flow farm in compliance with Benthic Guidelines would likely cause a decrease in production with potential negative economic impacts.

Price Waterhouse Coopers (PwC) was commissioned to undertake an economic analysis to identify likely economic impacts of changes to management of the six existing lower-flow sites, both from swapping sites and from adopting the Benthic Guidelines<sup>40</sup>. The economic analysis has been reviewed by Ernst and Young. The analysis estimates that 100 tonnes of new net annual salmon production increase GDP by approximately \$0.45 million in the Nelson and Marlborough regional economies and would support approximately 4.7 FTEs annually.

There is scientific uncertainty about the exact stocking level that will meet the Benthic Guidelines, and a fallowing period is likely to be needed to return the seabed to a condition that complies with these guidelines. GDP and FTE implications under both minimum and maximum stock levels have therefore been estimated.

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<sup>40</sup> The Cawthron Institute provided likely feed levels and fallowing times to meet the Benthic Guidelines. Keeley, N. & Taylor, D (2016) Assessment of Sustainable Feed Levels at Low Flow Farms to Comply with BMP-Benthic Guidelines. Cawthron Institute. Report ID: 1641.  
Ministry for Primary Industries Potential Relocation of Salmon Farms in the Marlborough Sounds • 43

### 7.2.1 Economic benefits of relocating farms

Economic analysis indicates that there would be a potential benefit of approximately \$49 million annually to regional GDP and 511 FTEs if all six potential relocation sites were operated at the maximum production levels that complied with the Benthic Guidelines.

Assuming that components and supplies to build each farm is supplied locally, the construction of the infrastructure at each potential site would produce a one-off GDP benefit of approximately \$3.2 million for the Nelson and Marlborough economies. Construction activities for each site would also support approximately 39 FTEs for the region for a year. The contribution to the local economies would be reduced if components for the farms are sourced overseas.

### 7.2.2 Economic impacts of not relocating farms

Economic analysis estimates that current production at the existing lower-flow farms provide an annual GDP value of approximately \$10 million and employment of an estimated 105 FTEs. The two Crail Bay sites have not been operational since 2011 and are not included in this estimate, as these farms will not be commercially viable under the Benthic Guidelines. Implementing the Benthic Guidelines at these existing farms would require an initial destocking and fallowing for two to five years to allow the seabed to recover before recommencing production at lower stocking levels. Over the fallowing period approximately \$10 million GDP per annum and 105 FTEs would be lost.

Under minimum stocking levels all four operational farms are not commercially viable and would be destocked. This would result in an estimated ongoing loss of \$10 million in GDP and 105 FTEs (Figure 4). Under the maximum stocking levels three of the four existing farms (Waihinu Bay, Forsyth Bay, and Otanerau) would remain commercially viable, but at lower production levels. Economic analysis estimates that the production at these sites would result in \$6.4 million added to GDP per year and 67 FTEs in employment. Compared to the present situation, this amounts to an estimated loss of \$3.6 million per year in GDP and 38 FTEs in employment (Figure 3).

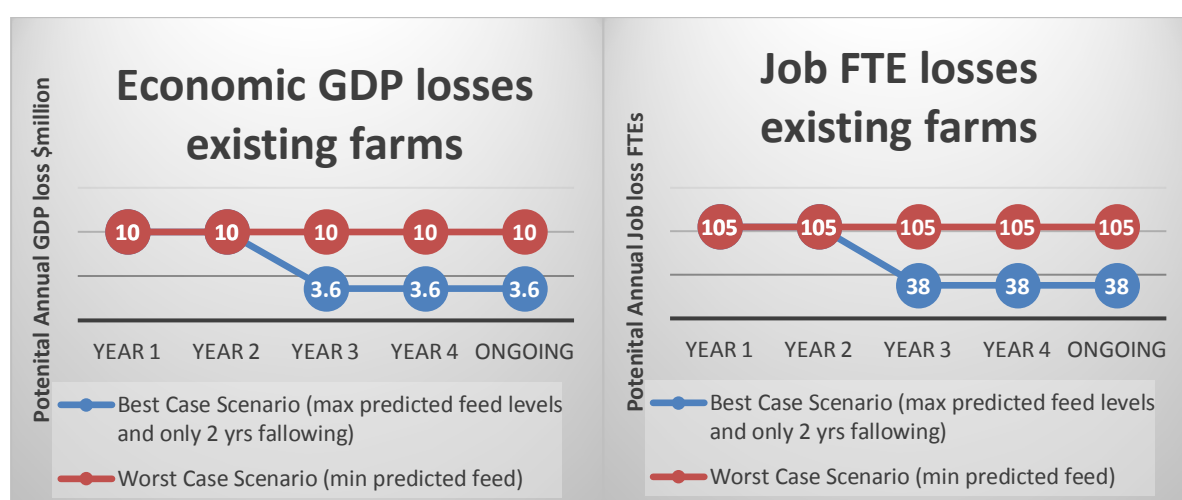


Figure 4. Economic GDP losses at existing farms (left) and job FTE losses at existing farms (right).

Put simply, if the Benthic Guidelines are implemented at existing farms under maximum and minimum stocking levels, there would be an estimated loss of \$10 million GDP per year and 105 FTEs during the two to five year fallowing period, and an estimated ongoing GDP loss of \$3.6 million to \$10 million per year. There would also be an estimated ongoing loss of employment of 38 to 105 FTEs. In contrast, the maximum value added at the six relocation sites is estimated to add up to \$49m annually to regional GDP and 511 FTEs.

Overall economic impacts will be able to be calculated with more certainty after the consultation and confirmation of sites to be included in the relocation proposal.

## 7.3 POTENTIAL ENVIRONMENTAL EFFECTS

### 7.3.1 Landscape and natural character

Because salmon farms are non-natural structures located in the coastal marine area, they can cause adverse effects on landscape and natural character. Hudson Associates Landscape Architects has undertaken a landscape and natural character assessment of the potential relocation sites, and of the effects of removing farms from the existing lower-flow sites.

The New Zealand Institute of Landscape Architects uses a standard seven-point scale to classify landscape and natural character values. Landscape and natural character are assessed separately and classified on a scale of: very high/high/high-moderate/moderate/moderate-low/low/very low values.

A site is first assessed for its existing values using this scale, and then any change in the values as a result of a proposal (in this case the addition or removal of a salmon farm) is assessed. A decrease in values (for example, moderate to moderate-low) is considered an adverse effect, whereas an increase in values (for example, moderate to high-moderate) is considered a positive effect.

Hudson Associates Landscape Architects assessed five potential relocation sites on the basis that a feed and accommodation barge of the latest architectural design would be located at the site, as well as net pens. At the Waitata Mid-Channel site a low-profile semi-submersible feed receptacle (circular or similar in appearance and located on the north-western side of the farm) has been assessed. At the Blowhole Point North, Blowhole Point South and Waitata Mid-Channel sites, the landscape and natural character assessment has been based on the use of circular net pens (plastic circles) (Figure 5) rather than the more common rectangular pens.





Figure 5. Photo of circular net pens (plastic circles) in Norway by Tim Dempster.

The assessment suggests that placement of a salmon farm at all potential sites would cause an adverse effect on landscape and natural character; however, these effects would not be significant. Detailed outlines of the assessments at each site are contained in the Landscape Report and in the Summary AEE. Significant benefits could arise at each of the existing lower-flow sites with the removal of salmon farms. This benefit is most marked at Ruakaka Bay, and least at Otanerau where the surrounding environment is very much a working landscape.

The potential Blowhole Point North and Blowhole Point South sites are located within an area identified as an Outstanding Natural Feature in the proposed Marlborough Environment Plan, and within an area identified as an Outstanding Natural Landscape. The area is not identified as an Area of Outstanding Landscape Value in the Marlborough Sounds Resource Management Plan. The Landscape Report acknowledges that the headland adjacent to these sites has associative values linked to the “gateway” to Pelorus Sound, but concludes that the potential relocation proposal will have a less than minor effect on these values due to the expansiveness of the overall landscape context at this location.

Cumulative effects of salmon farms have been considered because of both the number of potential sites in Pelorus Sound (together with the existing new salmon farms at Waitata and Kopāua) and because of the potential addition of an extra farm to the three existing farms in Tory Channel.

In relation to Pelorus Sound, if all of the sites were established there would be a series of individual locations along the length of the Waitata Reach where simultaneous views of up to three salmon farms at a range closer than three kilometres would be obtained. At a distance of two to three kilometres a salmon farm is generally partially visible or a minor part of the view. The Landscape report concludes that these effects are not likely to be significant due to the backdrop, scale and character of the setting. A more significant cumulative effect could occur through sequential views of salmon farms as somebody travelled through the Waitata Reach by boat. The Landscape report contains a detailed analysis of the potential effects of this.

In Tory Channel, simultaneous views of the existing Te Pangu and the potential Tio Point sites would be likely from the southern side of the channel. However, the sites would be seen against backdrops of rising landform and would be recessed into bays, and Tio Point itself separates the two sites and reduces the distance over which both farms could be seen. There would also be a relatively short distance (less than 3km) over which three farms (the existing Clay Point site, the potential Tio Point site and the existing Te Pangu site) would be able to be seen together. Because the land use character in the area is of a productive working landscape, and the landform and backdrop are dominant in any views, the Landscape Report concludes that cumulative effects will not be significant.

Drakeford Williams provided a detailed peer review of the landscape assessment. The review identified a series of areas where additional information was required, and this was addressed in the final landscape and natural character report. Overall the peer review confirmed that the assessment followed best practice methodology and used appropriate and consistent comparison measures.

The main areas of difference between Hudson Associates Landscape Architects and Drakeford Williams is the assessment of the effects of the Waitata Mid-Channel site, and in the consideration of cumulative effects. Overall Drakeford Williams sees the potential for greater effects on natural character and landscape at the Waitata Mid-Channel site than Hudson Associates, and the potential for greater cumulative effect at the two Blowhole Point sites and at the Richmond Bay South and Horseshoe Bay sites, when the sites are considered in combination. The Drakeford Williams peer review is available on the Ministry for Primary Industries' website <http://www.mpi.govt.nz/news-and-resources/consultations>.

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?

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?

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?

### 7.3.2 Water quality

As salmon farming requires the addition of fish feed into the sea pens and farmed fish create waste products, there is the potential for adverse water quality effects with increased nutrient concentrations in the water. Water quality limits or thresholds are generally set to try to manage these effects. Since 2014, NIWA has developed improved water quality models for Queen Charlotte Sound and Tory Channel, and Pelorus Sound. NIWA has used these models to assess the potential effects on water quality (specifically, changes in levels of nitrogen) for relocating the six existing lower-flow salmon farms to higher-flow sites.

When assessing overall effects on water quality, chlorophyll concentrations are considered to be a primary indicator. Two thresholds for chlorophyll concentrations are relevant when assessing water quality effects:

- a.  $3.5 \text{ mg m}^{-3}$  – agreed as a provisional water quality standard for a number of the existing King Salmon farms that acts as a trigger to investigations to determine whether the salmon farms have caused an exceedance of water quality standards, and;
- b.  $5 \text{ mg m}^{-3}$  – identified as a level that might indicate the occurrence of a phytoplankton bloom.
- c. The Tory Channel water quality model predicts that average chlorophyll concentrations might be approximately  $1.26 - 1.44 \text{ mg m}^{-3}$  in summer (compared to an existing average of  $1.24 \text{ mg m}^{-3}$ ) if a salmon farm is established at the potential Tio Point site. While this is not seen as especially extreme when compared to the natural variation in summer time chlorophyll measurements, if levels were persistently higher, subtle changes in the phytoplankton and zooplankton in Queen Charlotte Sound and Tory Channel could occur. If chlorophyll increases are to occur at a time when natural chlorophyll levels in Tory Channel and Queen Charlotte Sound are just under  $3.5 \text{ mg m}^{-3}$  or  $5 \text{ mg m}^{-3}$ , these levels may be exceeded a little more often than they are currently. Changes in small embayments and side bays along Tory Channel may be greater than these levels.

There is also the potential for increased occurrence of harmful algal blooms. Harmful algal blooms have been recorded in the past in Onapua Bay and on one occasion (in 2011) Oyster Bay. Water quality modelling shows potential for some increased nitrogen and phytoplankton levels in Onapua Bay and other side bays in Tory Channel. Elevated nutrients from fish farming may influence the incidence and severity of harmful algal blooms and a risk assessment will be undertaken prior to a potential farm being established at Tio Point. This risk assessment will consider the cumulative effect of feed levels from the potential Tio Point farm, alongside those from the existing and future discharges from the Clay Point, Te Pangu and Ngamahau farms.

The Pelorus Sound model predicts that areas of Pelorus Sound, such as Mahau Sound, Kenepuru Sound and Tawhitinui Reach/Fitzroy Bay would be likely to experience the largest overall increases in summertime chlorophyll concentrations. The modelling predicts that the average summertime increase in chlorophyll concentrations would be  $0.08 - 0.1 \text{ mg m}^{-3}$ . However, NIWA notes that generally the Pelorus Sound model over-predicts summertime chlorophyll concentrations. Bearing this in mind, NIWA states that the modelling would not generate frequent breaches of  $3.5 \text{ mg m}^{-3}$  even in the scenario where all five potential sites are modelled as operational. Notwithstanding this, the model predicts slight enrichment of the Pelorus Sound water column. The location of potential enrichment is also affected to a certain extent by the location of the potential farm sites, with for example reduced enrichment in Pelorus Sound when farms are placed close to the mouth of the Sound, but somewhat increased enrichment in adjacent areas outside Pelorus Sound in this situation.

Importantly, the water quality models uses a maximum feasible production levels for each potential site, but do not consider the potential seabed effects (see below). Seabed effects are likely to occur at lower feed levels than water quality effects, and would serve as the limiting factor to the amount of feed that could be discharged at any relocation site.

The Cawthron Institute and a group of technical experts<sup>41</sup> reviewed the Tory Channel and Pelorus Sounds' water quality models. The review has noted that the models should predict as well as possible at the scale of a whole Sound, but will not be accurate for predicting fine scale effects on embayments. Limitations of the models are outlined in both the Summary AEE and the NIWA reports. While the models are appropriate for a wide range of resource management purposes, direct comparison to an existing system has not been undertaken. This suggests that the water quality models will be somewhat stretched beyond the conditions against which it was originally compared during its development. The reviews recommended that supporting evidence is needed to have confidence that the model predictions of water quality effects are robust. The Ministry for Primary Industries will continue to gather this supporting information, which will be completed in early 2017, and made available during consultation. This information will be considered by the Minister for Primary Industries to help inform any final decision. Further, government, Marlborough District Council and the community will begin developing water quality guidelines this year.

Water quality effects from salmon farms can also arise from discharges of greywater. Greywater discharges are generated mainly from the workers' living quarters, and include domestic wastewater arising from showers and wash basins, but excludes any toilet waste. Components of greywater that can cause adverse effects include temperature, nutrients, oil, and grease. The Cawthron Institute suggests that either the concentrations of these components or their overall load in the discharged greywater is sufficiently small that any effects on the environment are unlikely to occur more than a few metres away from the discharge point. In addition, the discharge levels will not increase as a result of relocating any existing lower-flow farm to a higher-flow site.

The final matter considered in terms of water quality effects is the discharge of copper and zinc from salmon farm activities. There are three routes by which copper and zinc can enter the marine environment from uneaten fish food (zinc), from fish faeces (zinc), and from leaching from anti-fouling paints on predator nets (copper and zinc). King Salmon no longer uses anti-fouling paints on its nets, and since 2011 has been using feed containing organic associated zinc, which increases the uptake by fish and reduces the discharge to the environment. The Cawthron Institute concludes that effects from copper and zinc are anticipated to be minor, if not negligible.

- Q19. What are your thoughts on the potential water quality effects at the potential relocation sites?
- Q20. Are there ways in which the potential relocation sites should be developed to help avoid, remedy or mitigate adverse effects on water quality?
- Q21. Are there other effects on water quality that you would like us to be aware of?
- Q22. What further information would you suggest the Minister for Primary Industries collects on water quality effects in relation to the Tio Point site?

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<sup>41</sup> Expert group was convened by the Ministry for Primary Industries on 12<sup>th</sup> July and 3<sup>rd</sup> October 2016



### 7.3.3 Seabed

The seabed environment in the Marlborough Sounds can be broadly divided into three categories – bedrock reef, boulder/cobbles and soft sediments (such as sand, silt and mud). A wide variety of different species occupy these environments, and are generally described as either ‘infauna’ (animals that live within the sediments) or epifauna (animals living on the sediment surface). Salmon farms can affect the seabed environment through the deposition of waste material (from any uneaten fish feed and the faeces produced by the fish) and can cause nutrient enrichment of the sediments. This change in the seabed environment can affect the species living there, by making living conditions unfavourable for some species and more favourable for others.

To assess the effects of the potential relocation sites, NIWA and the Cawthron Institute were commissioned to undertake two pieces of work:

1. an investigation of the seabed underneath each potential site to provide information on the type of habitat present (such as reefs, sediments);
2. a modelling exercise using site specific information about current speeds, water depths and predicted feed levels to assess the potential footprint and level of effects of deposition on the seabed.

All of the potential relocation sites are located over sandy mud habitat, with some areas of shell gravel underneath the Blowhole Point North and Tio Point sites. The infauna and epifauna varies at each of the sites, and is summarised in Table 7 below<sup>42</sup>:

**Table 7: Summaries of seabed communities at potential relocation sites**

Site	Seabed communities
Blowhole North	The sandy mud substratum beneath the farm site supports an epifaunal <sup>43</sup> community that is sparse and mostly composed of common taxa. Small biogenic clumps <sup>44</sup> of associated organisms mainly comprising ascidians and hydroids are present in a scattered distribution. Brachiopods are found at various locations within the site, and scallops are relatively abundant. Reef patches and kelp communities fringing the shoreline provide habitat for paua and kina, and the varied shoreline habitats and adjacent subtidal zone is blue cod habitat.
Blowhole South	Most of the site is positioned over a sandy mud/shell gravel habitat supporting a moderately abundant mixed community of seaweeds (macroalgae) and diverse invertebrates. Brachiopods ( <i>Terebratella sanguinea</i> and <i>Calloria inconspicua</i> ) are found at positions throughout the site in

<sup>42</sup> Brown, S. Anderson, T.J. Watts, A. Carter, M. Olsen, L. Bradley. A (2016). Benthic Ecological Assessments for Proposed Salmon Farms Part 1. National Institute of Water & Atmospheric Research Ltd.; Clark D, Taylor D 2016. Additional Seabed Information for a finfish farm effects assessment at Tio Point, Oyster Bay, Tory Channel. Prepared for Ministry of Primary Industries. Cawthron Report No. 2882. 23 p. plus appendices.

<sup>43</sup> Animals that live on the seabed.

<sup>44</sup> Aggregations of a variety of organisms.

Site	Seabed communities
	<p>dredge and grab samples, but no dense beds were detected during the study. A large reef extending to the southeast of Blowhole Point (and to within ~230 m of the site boundary) provides habitat for a diversity of seaweeds, and sessile and mobile fauna, and associated reef, demersal and pelagic fish species. This reef, together with smaller patches of bedrock, cobble and sand around the shoreline comprise blue cod habitat inshore of the site.</p>
Waitata Mid-Channel	<p>At this site there are no ecological features of special significance identified beneath the cage area nor in the vicinity of the proposed farm. Habitats and taxa identified at this site can be considered to occur widely in the greater area of Waitata Reach and Pelorus Sound (e.g. Davidson et al 2011, DoC 1995, McKnight and Grange 1991). Furthermore, the site is deep and is subject to strong currents, so depositional material is likely to be dispersed more widely and the magnitude of effects is likely to be reduced.</p>
Richmond Bay South	<p>There are no particularly notable communities or taxa recorded on the muddy seabed in the immediate vicinity of the site, but scallops are relatively abundant within the site, which may be an issue in relation to commercial and recreational fishing interests. Reef habitat supporting a diverse community is present inshore of the site.</p>
Horseshoe Bay	<p>The cage area and most of the proposed farm site is situated over sandy mud seabed. A zone of shell rubble habitat and associated epibiota considered to be an uncommon ecological feature in the context of the Pelorus Sound region is located approximately 90 m north of the northwest corner of the site. Scallops are relatively abundant beneath the cage area and wider site. There is an extensive bedrock reef supporting diverse biotic communities in the vicinity, but not within the proposed farm boundaries.</p>
Tio Point	<p>A number of novel habitats and taxa are recorded in the survey but most are present at low densities or beyond the boundaries of the proposed site. Burrowing sea cucumbers are not observed in the survey suggesting this species is unlikely to be widespread in the vicinity of the proposed site. Sabellid tubeworm (<i>Bispira bispira</i> A) beds appear to be restricted to shell hash habitat in vicinity of the proposed farm and may be impacted by farm deposition. Hydroid trees (<i>Solanderia</i> sp.) are observed occasionally in the vicinity of the proposed site, however, they appear to be low in number and more limited in extent than the communities found on the north eastern coast</p>

Site	Seabed communities
	of Tory Channel. Reef habitat is present at the two headlands and along the coastline inshore of the potential site.

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. 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. Those feed levels are recommended to be set as maximum discharge levels at each potential farm.

The potential Blowhole Point North, Blowhole Point South and Horseshoe Bay sites are located in close proximity to existing mussel farms. Mussel farming also causes an enrichment footprint on the seabed, and at these sites the footprints from the mussel and potential salmon farms would likely overlap. The Cawthron Institute has investigated this overlap. At all three sites the enrichment footprint of the potential salmon farms would dominate the effects. The addition of the mussel farm footprints would not have a significant effect on seabed enrichment, would not increase the enrichment sufficiently to move it up a stage on the enrichment scale outlined in the NIWA report, and would not exceed ES5.

The seabed reports prepared by NIWA and the Cawthron Institute have been peer reviewed by both Associate Professor Catriona McLeod of the University of Tasmania and by a group of technical experts convened by the Ministry for Primary Industries. The reviewers consider the reports to provide a comprehensive baseline assessment of the conditions at the potential relocation sites, with the reports noted as being sensibly constructed, well conducted, and having sound interpretation. Minor comments were made by each set of reviewers, and have been incorporated into the final NIWA and Cawthron reports.

- Q23. What are your thoughts on the seabed effects at the potential sites?
- Q24. Are there ways to develop the potential sites to help avoid, remedy or mitigate adverse effects on the seabed at each site?
- Q25. Are there other seabed values or effects that you would like the Minister for Primary Industries to be aware of?

#### 7.3.4 Pelagic Fish

The pelagic (water column) environment of the Marlborough Sounds is highly productive and supports a wide range of marine fish species. At least 49 different species of fish and sharks have been recorded in three recent studies in Pelorus Sound and Tory Channel. Using extensive overseas literature, Taylor and Dempster have developed an overview of the possible effects of salmon farms on the pelagic habitat and finfish species.

Wild fish are attracted to finfish farms, often in higher densities than might otherwise exist if the farm was not present. For example, yellow-eyed mullet, pilchard, anchovy and jack mackerel have been observed within the existing King Salmon farms, although on a highly seasonal basis. There are several reasons wild fish are attracted to fish farms, including light, sound, sources of food (both other fish and waste feed) and the farm structures providing a refuge and protection from predators.

The most important effect of fish farms occurs through wild fish consuming the waste feed discharging from the farm net pens. Wild fish populations feeding on waste feed can have increased body condition (which can either increase or reduce reproductive fitness depending on the quality of the feed in comparison to a wild diet), and increased heavy metal concentrations. In the case of the Marlborough Sounds, elevated levels of heavy metals are unlikely under current feeding regimes and with the discontinuation of use of anti-fouling paints. However, monitoring of key contaminants in fish species close to salmon farms is recommended.

At least 14 shark species have been recorded in the Marlborough Sounds. Four of these species have been observed close to existing salmon farms. Careful management approaches are required to minimise interactions between humans and sharks, including the adoption of best practices such as good farm husbandry to minimise fish mortality, prompt removal of dead fish, and use of predator exclusion nets.

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

#### 7.3.5 Seabirds

The Marlborough Sounds supports a diverse and abundant seabird community, including three species that are Nationally Endangered (one of which is the New Zealand King Shag), six that are Nationally Vulnerable and eight that are At Risk because of declining populations. NIWA provided expert advice on the effects of the proposal on seabirds.

With the exception of King Shag, all of these species have relatively large distributions and are relatively abundant. As such, the proposal to relocate up to six salmon farms within the Marlborough Sounds is likely to have a negligible and unmeasurable effect on seabirds generally.

King Shags are of most concern in relation to the proposal because of their distribution, population numbers (less than 1000), feeding habits and threat status (Nationally Endangered). There are a number of ways in which King Shag could be affected by the proposal – by disturbance at breeding or roosting sites, by exclusion from potential foraging



habitat, and by changes to water quality. The Working Group has highlighted the potential effect of introducing nutrients into the Pelorus Sound water column and the possibility of harmful algal blooms on King Shags.

In relation to disturbance at breeding or roosting sites, the closest potential relocation sites are still approximately three kilometres from the nearest King Shag breeding colony.

This distance is sufficiently far away to pose a negligible risk from noise and activity.

In relation to changes to water quality, the scale and location of modelled increases in water turbidity (i.e. how murky the water is) is unlikely to affect King Shag foraging. There have been no known harmful algal blooms directly attributable to finfish farming in New Zealand. Blooms have been recorded and harmful species detected throughout the Marlborough Sounds; however, these appear to be regional phenomena driven by local hydrodynamic processes, and not salmon farming activities.

The picture is more complicated for effects on King Shag foraging. Marine farms occupy space and can potentially exclude King Shag from these areas. All of the potential sites in Pelorus Sound are located within the foraging range for King Shag, as are all of the existing farms. Observations of King Shag suggest that 74 percent of birds feed in water depths of 20 to 40 metres deep. The Waitata Mid-Channel site and portions of the four other potential relocation sites in Pelorus Sound are in water that is likely to be too deep for King Shag foraging. In contrast, the entire area of the four existing lower-flow farms in Pelorus Sound are all in shallow enough water for King Shag foraging. Therefore, removal of these existing lower-flow farms is likely to be beneficial to King Shag.

However, in Tory Channel, the potential Tio Point site is beyond the preferred King Shag foraging range.

There is relatively little information available on King Shag feeding behaviour. Statfishstics was commissioned to review the available information on King Shag prey and concluded that these birds mainly eat witch (a flatfish species), with other bottom dwelling species such as opalfish, common sole and lemon sole taken when available. Witch is a visual feeder with a diet that includes a range of species, including small pelagic fish. These pelagic species would move away from a potential site if a farm was operating there. There should be no significant effects on King Shag foraging because the main effect on their predominant prey species is displacement (within a wide area of available foraging habitat) rather than reduced numbers.

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

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

### 7.3.6 Marine mammals

Marine mammals recorded in the Marlborough Sounds include New Zealand fur seals, orca, Hector's dolphins, dusky dolphins, bottlenose dolphins, southern right whales, and humpback whales. Cawthorn and Associates were commissioned to assess the effects of relocating up to six existing salmon farms on marine mammals.

Southern right whales and humpback whales are unlikely to be affected by relocating any existing farms. Humpback whales do most of their foraging in cold, productive, high latitude water and generally do not eat when migrating. The likelihood of them targeting the potential sites as feeding areas is considered to be insignificant. The risk of entanglement of humpback or right whales is minimal to negligible, as mooring lines are kept constantly taut. With regard to the Waitata Mid-Channel site, its location will provide enough passing space for whales.

The presence of salmon farms may attract dolphins as their prey (school fish) are more likely to be around sea pens due to the night lighting and waste feed. Dolphins are likely to find pens that have been moved through farm relocation relatively quickly. Only occasional interactions between dolphins and salmon farms have been recorded in the Marlborough Sounds. Cawthorn and Associates conclude that all dolphin species in the Marlborough Sounds are well accustomed to the presence of salmon farms and assesses the risk of relocation as negligible to low.

Hector's dolphins have not been reported in Pelorus Sound. Hector's dolphins have been recorded in Queen Charlotte Sound and are likely to be a sub-group of a population of about 950 found in nearby Clifford and Cloudy Bays.

New Zealand fur seals are present throughout the Marlborough Sounds, with numbers increasing over winter as the seals seek more sheltered haul-out areas. In general, the effect of seals on marine farms are greater than the effect of farms on the seals. Seals will come to a salmon farm for the purpose of feeding and unless predator control is installed and maintained, seals will attempt to enter the pens. Seals are also likely to establish non-breeding haul-outs near salmon farms to enable them easy access to the potential food sources provided by farms.

Interactions between seals and salmon farms are common. King Salmon's standard operating procedures mitigate these interactions through the use of continual improvement to pen structural and net design, use of properly tensioned protection nets surrounding each pen, and constant vigilance by farm staff. Other procedures include appropriate feeding systems, site management and farm management practices (such as retention of all net and cordage debris, plastic strapping and other domestic rubbish for disposal ashore) and constant gear maintenance.

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

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

### 7.3.7 Biosecurity

There are several ways that aquaculture can result in risks from marine pests. These are:

- The movement of infected vessels, equipment and stock, that could cause or increase the spread of potentially harmful marine pests;

- The provision of habitat where some marine pests (for example, biofouling) could proliferate, providing a “reservoir” for subsequent spread by both natural dispersal and human activities;
- Modification of habitats, for example through seabed enrichment that may facilitate the establishment of certain pests.

Ministry for Primary Industries is working to improve biosecurity in the aquaculture industry overall. See *Options to Strengthen On-farm Biosecurity Management for Commercial and Non-commercial Aquaculture* <http://www.mpi.govt.nz/news-and-resources/consultations>. This document also relates to aquatic disease risks discussed in the section below.

In respect to the potential farm relocations and their on-going operations, the Cawthron Institute has assessed potential biosecurity related environmental effects. Biosecurity risks posed by the King Salmon relocated farms do not provide pathways for the introduction of new pest species to the region and are not greater than the biosecurity risks posed by other activities within the region. None of the potential relocation sites are located in areas that are not already subjected to ongoing biosecurity pressures from activities such as salmon farms (in higher-flow areas), mussel farms and other coastal structures. The proposal to relocate up to six farms provides a potential benefit by clustering farms into two geographically discrete sub-regions, which would enable more effective management of biosecurity risk.

Farm management and operational practices can limit the spread of pest species through on-farm identification of pest species and appropriate management of pathways. To mitigate any risks, the Cawthron Institute recommends that King Salmon continues to implement its comprehensive biosecurity management plan. It also recommends that King Salmon further considers the extent to, which the existing biosecurity management plan can be improved to recognise the clustering of the potential relocation sites in discrete sub-regions.

The potential regulatory amendments to the Marlborough Sounds Resource Management Plan would require King Salmon to develop Biosecurity Management Plans for any relocated farms, in consultation with the Ministry for Primary Industries’ biosecurity experts. To ensure ongoing compliance, independent annual audits would be compulsory. Note that the Biosecurity Management Plan, in addition to addressing biosecurity, will also cover disease (see section below).

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

### 7.3.8 Disease

Twenty-one infectious and 13 non-infectious diseases and parasites of wild and cultured salmon are known in New Zealand. DigsFish Services was commissioned to provide an updated disease risk assessment on the potential effects of relocating up to six of the existing lower-flow farms.

Of the 34 diseases and parasites known in New Zealand, only five require a specific assessment – *Piscirickettsia*-like bacteria, amoebic/nodular gill disease, sea lice, aquatic

birnavirus, and whirling disease. Of these, only the *Piscirickettsia*-like bacteria needs a specific risk management response. *Piscirickettsia*-like bacteria has been found associated with salmon mortalities on some of the existing lower-flow sites.

Measures to mitigate the disease risk posed to both cultured and wild fish include:

- optimising water quality for growing salmon by careful site selection and farm management;
- ensuring broodstock are not exposed to seawater;
- maintaining optimal stocking levels, fallowing and other farm/stock management practices such as single year class farming.

DigsFish Services identifies the importance of managing biosecurity risks using world's best practice, including establishing independent farm management areas separated by buffer zones. Buffer zones are also discussed in the Ministry for Primary Industries and Aquaculture New Zealand document, *Options to Strengthen On-farm Biosecurity Management for Commercial and Non-commercial Aquaculture* <http://www.mpi.govt.nz/news-and-resources/consultations>. The potential relocation of up to six lower-flow salmon farms to higher-flow sites would improve the environmental conditions to which the salmon are exposed, and reduce the risk of outbreaks of non-infectious diseases and mitigate the risk of infectious diseases emerging. While the proposal will not immediately allow King Salmon to adopt all of the practices identified above, it will improve biosecurity by establishing two independent farm management areas. The aim is to improve biosecurity within the geographical constraints of farming locations in the Marlborough Sounds.

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

### 7.3.9 Navigation

As salmon farms occupy space in the coastal marine area, there are potential effects on navigational safety. Navigatus was commissioned to assess the effects of the potential relocation sites on navigation.

Four areas of risk have been considered:

- the causes and effects of a large vessel passing close by or impacting a salmon farm;
- the risk associated with the potential of a farm to influence the actions of a master or skipper;
- the interactions between a small vessel and a salmon farm;
- the causes and effects of a farm breaking free and creating a hazard to other vessels and water users.

None of the potential sites would prevent access to existing wharfs, navigation between the sites and the shoreline, or the use of bays for shelter. While the farms would increase marine traffic, particularly during construction or relocation activities, the effect of this would be minimal. The potential relocation sites would have only a very limited impact on navigation safety, a similar impact as the existing farm sites. The potential Blowhole Point North site is close to a natural transit route and outside the headland to headland transit. Vessels would



need to steer further to seaward to avoid the potential farm site, but as there is plenty of sea-room at this point and vessel traffic is sparse, any impact on navigation is limited according to Navigatus. Additionally, having professionally crewed facilities at known locations and in otherwise remote areas may enhance safety for users of the nearby Sounds.

The potential sites have been discussed with the Harbourmaster at Marlborough District Council. With the exception of the Waitata Mid-Channel site, the Harbourmaster agrees that all the sites have a level of navigational risk that could be sufficiently mitigated with known controls such as lighting, charting and education. In relation to the Waitata Mid-Channel site, the Harbourmaster has identified a concern about navigational safety for cruise ships or large superyachts following a previously defined mid-channel track. Navigatus notes that establishing an alternative passage plan would avoid an issue and that about the same amount of room would remain on both sides of the potential Waitata Mid-Channel site as currently available for large vessels in Queen Charlotte Sound.

There remains a small chance that a farm could break its moorings and create a navigational risk. This risk is mitigated through appropriate mooring design, construction, management and maintenance, including the farms being staffed and monitored.

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

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?

### 7.3.10 Tourism and recreation

The Marlborough Sounds is used for many different tourism and recreation activities such as cruising, fishing, sailing, swimming, kayaking, water skiing, windsurfing, walking, tramping, biking and wildlife viewing. TRC Tourism has prepared an assessment of the potential tourism and recreation effects of the proposal.

Marine farms have the potential to affect tourism and recreation in several ways:

- marine farms located in areas used by recreational users can physically limit or block access to the area. The size of this effect depends on how easy it is for a recreational user to find a substitute location or route of a similar quality or type nearby;
- the location of a marine farm can affect the amenity value of the recreation and tourism experience;
- marine farms can have cumulative effects. While one marine farm may have no effect on recreation in a specific area, several marine farms in the same vicinity could increase the marine farming “footprint”, and may affect an area’s natural character and amenity values for users of the area;
- marine farms can have positive effects including the development of tourism products and experiences, and supporting recreation through providing refuges for fish from fishing activity and supporting fish populations.

A wide range of tourism and recreation opportunities are available throughout the Marlborough Sounds, providing an extensive choice of activities and locations for

recreational users and tourists. With the exception of the potential Waitata Mid-Channel site, none of the potential sites has activities that are not substitutable nearby. The potential Waitata Mid-Channel site has the potential to cause perceived visual effects for land-based eco-tourism operators in the vicinity.

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?

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

### 7.3.11 Heritage

HistoryWorks has prepared a heritage assessment of the proposal. The assessment largely relates to European heritage, as matters relating to wāhi tapu and other known Māori historical sites are being addressed through cultural assessments.

The potential sites will not directly modify heritage values, but may have an “indirect” negative impact on a heritage site’s ability to contribute to a full understanding and appreciation of the history of the Marlborough Sounds.

There are no shipwrecks within close proximity to the potential relocation sites. There are, however, several other heritage sites that are relevant to the proposal, such as archaeological sites, gun emplacements and whaling stations.

The potential Richmond Bay South, Waitata Mid-Channel and Horseshoe Bay sites have heritage items or values in their vicinity, namely the old gun emplacements on Maud Island and Post Office Point. The gun emplacement at Maud Island is located approximately 2.5 kilometres from the potential Richmond Bay South and Horseshoe Bay sites, and 4 kilometres from the potential Waitata Mid-Channel site. The two sites located within about 2.5 kilometres could impact on visitors’ perceptions of the gun emplacement and intrude on the ‘essential setting’ of the Maud Island site. However, the actual impact is limited particularly due to the small number of visitors to Maud Island. The gun emplacement at Post Office Point is in the vicinity of the Waitata Mid-Channel site and the site could have a similar impact on those heritage values. As the Post Office Point gun emplacement is located on private land, public visitors are likely to be very limited and this mitigates any impacts.

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

### 7.3.12 Noise

Salmon farms generally emit a low level constant sound from diesel generator equipment necessary to provide power, and intermittent noise from farming activities such as water blasting, net-lifting, feed dispersal and service vessel movements. Marshall Day Acoustics assessed the potential environmental effects of noise (airborne sound) generated from salmon farm activities on nearby residents, recreational amenity and the effects of underwater noise.

Noise effects will not be significant as the potential sites are sufficiently far away from residential dwellings. The potential sites would comply with standards developed during the Board of Inquiry. The following mitigation measures would further reduce any noise effects:

- use of silencers on net filters, water blasters and pumps;
- generator housing constructed to reduce noise emissions;
- avoidance of the use of outdoor speakers/radios on farms.

Marshall Day Acoustics also assessed the cumulative effects of potential sites in close proximity to each other, or within close proximity to existing farming sites. Noise levels at the closest dwelling to any of these sites are unlikely to increase as a result of farms operating at the same time.

The effects of removing the existing farms would be positive, as several of these existing farms are in close proximity to residential dwellings compared to the potential sites.

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

#### 7.3.13 Underwater lighting

Salmon farms use submerged lighting to inhibit salmon from maturing and to increase the efficiency of farm production. Lighting is only used during the shorter daylight months of April to October to reduce risk of early fish maturation. Lighting is not over-powered and is centralised within the pens to minimise spillage of light beyond the farm.

Artificial lighting has the potential to affect biological processes within and adjacent to sea pens. The Cawthron Institute has advised that marine organisms more than 10 metres from an underwater lighting source would not be affected. Any level of increased biosecurity risk due to underwater lighting is likely to be very low and difficult to delineate from the existing risk associated with increased densities of wild fish known to occur around salmon pens. Periodic surveys by King Salmon as part of existing consent conditions has confirmed that underwater lighting has no significant ecological effects.

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

#### 7.3.14 Residential amenity

Salmon farms can have a variety of social effects on both residential amenity and on the wider community. Taylor Baines and Associates has provided an assessment of:

- residential amenity effects – includes the likelihood of visual, noise, and odour intrusions experienced at the nearest dwellings in the vicinity of each site;
- potential for wildlife nuisances – seals in high numbers spilling over into adjacent areas used by people, or seagulls in high numbers roosting on nearby jetties;
- shoreline solid waste effects – the potential for beaches to accumulate waste from salmon farms such as rope or plastic items.

The sites in Pelorus Sound would have largely minimal effects on residential amenity, except for the potential Waitata Mid\_Channel site where thirteen residential properties would have a long-distance view. The potential for the greatest cumulative effect is on the Tui Nature Reserve property where three of the potential sites could be visible. The greatest residential amenity benefits would occur from relocating the Waihinu Bay and the two Crail Bay sites to any of the alternative sites in Pelorus Sound.

By comparison with the situation in Pelorus Sound, opportunities for improving residential amenity through salmon farm relocation in the Queen Charlotte/Tory Channel area are more limited. There are relatively few residential dwellings that have a direct line of sight of the potential Tio Point site. No dwellings are closer than one kilometre to this site. While minor visual effects on these dwellings might occur, any other effects on residential amenity would be negligible or unlikely.

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?

## 7.4 OVERALL SUMMARY OF ENVIRONMENTAL EFFECTS AT EACH POTENTIAL RELOCATION SITE

Each of the potential relocation sites has specific environmental effects that may arise if a salmon farm was located there. Detail on these effects is available through the summary Assessment of Environmental Effects and the relevant technical reports.

Maximise Consulting and Ngāti Koata have prepared Cultural Impact Assessments that discuss potential cultural effects as a result of the proposal. These documents are available on the Ministry for Primary Industries' website <http://www.mpi.govt.nz/news-and-resources/consultations>.

An overall summary of the key potential effects specific to each site is provided in Table 8. Effects on the following matters are common to all of the potential relocation sites, and as outlined in each of the sections above, are not anticipated to be significant and are not included in Table 8 below.

- marine mammals;
- pelagic fish;
- noise;
- disease risk (posed to both cultured and wild fish);
- Biosecurity (marine pests);
- underwater lighting;
- greywater;
- copper and zinc discharges.



**Table 8: Overall summary of key potential site specific environmental effects**

Site	Key potential site specific environmental effects
Blowhole Point North	<p>Water quality effects are not anticipated, but need to be carefully managed, as the potential maximum production across all sites in Pelorus Sound is a significant increase in discharge compared to the current situation.</p> <p>An annual feed discharge level of 4500 tonnes can be accommodated at the site while maintaining compliance with the Benthic Guidelines. Reefs exist along the coastal margin and at Blowhole Point. The predicted seabed deposition is not anticipated to cause significant environmental effects on these reefs, but ongoing monitoring and adaptive management would be needed to ensure this.</p> <p>At a site specific scale the landscape values are High-Moderate and natural character values are moderate, which would change to Moderate and Moderate-Low respectively if a salmon farm was located at the site. The effects of this change are not considered to be significant. The potential site is located in a proposed Outstanding Natural Feature and in a proposed Outstanding Landscape under the proposed Marlborough Environment Plan. At the scale of these areas the effects would be less than minor.</p> <p>The potential site poses a marginally increased risk to navigation, but any increase in risk is limited.</p> <p>The potential site is within foraging distance of the main King Shag colonies at Duffers Reef, North Trio and Sentinel Rock. The majority of the net pens would be located in water greater than 50m deep, deeper than preferred King Shag foraging depth.</p>
Blowhole Point South	<p>Water quality effects are not anticipated, but need to be carefully managed, as the potential maximum production across all sites in Pelorus Sound is a significant increase in discharge compared to the current situation.</p> <p>An annual feed discharge level of 5000 tonnes can be accommodated at the site while maintaining compliance with the Benthic Guidelines. Reefs exist along the coastal margin and at Blowhole Point. The predicted seabed deposition is not anticipated to cause significant environmental effects on these reefs, but ongoing monitoring and adaptive management would be needed to ensure this.</p> <p>At a site specific scale landscape values are High-Moderate and natural character values are Moderate, which would change to Moderate and Moderate-Low respectively if a salmon farm was located at the site. The effects of this change are not considered to be significant. The potential site is located in a proposed Outstanding Natural Feature</p>

	<p>and in a proposed Outstanding Landscape under the proposed Marlborough Environment Plan. At the scale of these areas the effects would be less than minor.</p> <p>The potential site is within foraging distance of the main King Shag colonies at Duffers Reef, North Trio and Sentinel Rock. Approximately half of the net pens would be located in water at least 50m deep, deeper than preferred King Shag foraging depth.</p>
Waitata Mid-Channel	<p>Water quality effects are not anticipated, but need to be carefully managed, as the potential maximum production across all sites in Pelorus Sound is a significant increase in discharge compared to the current situation.</p> <p>An annual feed discharge level of 12000 tonnes can be accommodated at the site while maintaining compliance with the Benthic Guidelines, although this level of discharge is not sought in the potential relocation proposal in recognition of the need to manage potential effects on water quality. Any farming at this site is likely to be restricted to 7000 tonnes of feed discharge.</p> <p>At a site specific scale seascape values are High and natural character values are Moderate, which would change to High-Moderate and Moderate-Low respectively if a salmon farm was located at the site. The effects of this change are not considered to be significant.</p> <p>A potential navigation issue has been identified with the location of the site in the middle of the Waitata Reach. The Marlborough District Council's Harbourmaster has identified an issue, but the navigational expert does not consider the issue to be significant.</p> <p>The potential site could have an impact on the heritage values of the World War II gun emplacement at Post Office Point, but this effect is likely to be minor, particularly considering the very small number of visitors to that site (which is located on private land).</p> <p>While the potential site is within foraging distance of the main King Shag colonies at Duffers Reef, North Trio and Sentinel Rock, the water is too deep for King Shag foraging.</p>
Richmond Bay South	<p>Water quality effects are not anticipated, but need to be carefully managed, as the potential maximum production across all sites in Pelorus Sound is a significant increase in discharge compared to the current situation.</p> <p>An annual feed discharge level of 6500 tonnes can be accommodated at the site while maintaining compliance with the Benthic Guidelines, although this level of discharge is not sought in the potential relocation proposal in</p>

	<p>recognition of the need to manage potential effects on water quality. Any farming at this site is likely to be restricted to 5000 tonnes of feed discharge. Reefs exist along the coastal margin. The predicted seabed deposition is not anticipated to cause significant environmental effects on these reefs, but ongoing monitoring and adaptive management would be needed to ensure this.</p> <p>At a site specific scale landscape and natural character values are both High-Moderate, which would change to Moderate if a salmon farm was located at the site. The effects of this change are not considered to be significant.</p> <p>The potential site could have an impact on heritage values of the World War II gun emplacement at Maud Island, but this effect is likely to be minor, particularly considering the small number of visitors to that site.</p> <p>The potential site is within foraging distance of the main Duffers Reach King Shag colony. The majority of the sea pens would be located in depths of 40-56m, towards the deep end of the range of the preferred King Shag foraging depth.</p>
Horseshoe Bay	<p>Water quality effects are not anticipated, but need to be carefully managed, as the potential maximum production across all sites in Pelorus Sound is a significant increase in discharge compared to the current situation.</p> <p>An annual feed discharge level of 1500 tonnes can be accommodated at the site while maintaining compliance with the Benthic Guidelines. Reefs exist along the coastal margin. The predicted seabed deposition is not anticipated to cause significant environmental effects on these reefs, but ongoing monitoring and adaptive management would be needed to ensure this.</p> <p>At a site specific scale landscape and natural character values are both High-Moderate, which would change to Moderate if a salmon farm was located at the site. The effects of this change are not considered to be significant.</p> <p>The potential site could have an impact on heritage values of the World War II gun emplacement at Maud Island, but this effect is likely to be minor, particularly considering the small number of visitors to that site.</p> <p>The potential site is within foraging distance of the main Duffers Reach King Shag colony. The majority of the sea pens would be located in depths 40m, at the deeper end of preferred King Shag foraging depth.</p>

Tio Point	<p>Water quality effects in Tory Channel and Queen Charlotte Sound are not anticipated, but effects on Oyster Bay and Onapua Bay in particular need to be carefully monitored, and feed discharges managed to minimise the risk of harmful algal blooms.</p> <p>An annual feed discharge level of 1600 tonnes can be accommodated at the site while maintaining compliance with the Benthic Guidelines. Reefs exist along the coastal margin. The predicted seabed deposition is not anticipated to cause significant environmental effects on these reefs, but ongoing monitoring and adaptive management would be needed to ensure this.</p> <p>At a site specific scale the landscape and natural character values are Moderate, which would change to Moderate-Low if a salmon farm was located at the site. The effects of this change are not considered to be significant.</p> <p>Water depths at the potential site fall within preferred foraging range of King Shags, but any risk is considered negligible because of the distance to breeding or roosting colonies.</p> <p>The site is located near the major ferry route in Tory Channel. Although there are navigational risks, these can be adequately mitigated.</p>
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## Part 6: Having your say





## 8 Part 6: Having your say

### 8.1 CONSULTATION PROCESS

Public consultation on this proposal will take place between 26<sup>th</sup> January and 27<sup>th</sup> March 2017 as outlined in Figure 6 below.

To help you in providing feedback on the proposal, relevant background information is available to view or download from the Ministry for Primary Industries' website at <http://www.mpi.govt.nz/news-and-resources/consultations>.

The Ministry for Primary Industries will hold public drop-in sessions during this time. These sessions are for information only and not for the purpose of providing comments. Details of the public drop-in sessions can be found on the Ministry for Primary Industries' website. The Ministry for Primary Industries will also hold hui on the proposal with iwi authorities.

Following the closing date for written comments, there will then be an opportunity for persons to attend public hearings and speak to their comments with a Marlborough Salmon Farm Relocation Advisory Panel. Iwi authorities will also have an opportunity to meet with the panel.

The Marlborough Salmon Farm Relocation Advisory Panel will review the expert research reports and analyse all written comments, and prepare a written report and recommendations to the Minister for Primary Industries. As part of the process expert workshops will be conducted as required to discuss and resolve any outstanding issues with the available information.



Figure 6. Consultation process.

### 8.2 YOUR FEEDBACK

We welcome your feedback on this consultation document. You do not have to answer all the questions. To ensure your point of view is clearly understood, you should explain your rationale and provide supporting information where appropriate. Comments are written only, but there will be an opportunity to speak to your comments before the Marlborough Sounds Salmon Farm Relocation Advisory Panel. A Feedback form is provided to assist you in providing written comments <http://www.mpi.govt.nz/news-and-resources/consultations>.

Anyone who wishes to make a written comments on the proposal can:

- email to: [aquaculture.submissions@mpi.govt.nz](mailto:aquaculture.submissions@mpi.govt.nz)
- post to:  
Salmon Farm Relocation  
Ministry for Primary Industries  
Private Bag 14  
Port Nelson 7042

Please make sure your written comments include the title of this consultation document and your:

- your name and title;
- your organisation's name (if you are submitting on behalf of an organisation), and whether your written comments represents the whole organisation or a section of it;
- your contact details (such public as, phone number, address, and email).

**Written comments must be lodged by 5pm on Monday 27<sup>th</sup> March 2017.**

If you would like to attend a hearing and meet with the Marlborough Salmon Farm Relocation Advisory Panel, will you please let us know as part of your written comments. Once we receive your written comments and your request to meet with the panel, we will notify you of the date, time and location.

### 8.3 WRITTEN COMMENTS ARE OFFICIAL INFORMATION

Please note that your written comments are official information. Written comments may be subject of requests for information under the Official Information Act 1982. The Official Information Act specifies that information is to be made available to requestors unless there are sufficient grounds for withholding it, as set out in the Official Information Act.

Persons who make written comments may wish to indicate grounds for withholding specific information contained within their feedback, such as if the information is commercially sensitive or if they wish, personal information to be withheld. The Ministry for Primary Industries will take such indications into account when determining whether or not to release the information.

### 8.4 WHAT HAPPENS NEXT?

The Marlborough Salmon Farm Relocation Advisory Panel's report, together with final advice from agencies on the proposal and statutory requirements, will form the basis of the Minister's decision on whether to recommend the use of regulations to enable relocation.

Before making a decision on whether to recommend regulations, the Minister will take account of:

- the report and recommendation on the consultation;
- the provisions of the Marlborough Sounds Resource Management Plan;
- whether regulations are necessary or desirable for the management of aquaculture in accordance with Government policy;

- whether the matters addressed are of regional or national significance;
- whether the amended plan will continue to give effect to any National Policy Statement, Regional Policy Statement or the New Zealand Coastal Policy Statement, or National Environmental Standard;
- the evaluation report on the costs and benefits of the proposal (s32 analysis);
- the views of the Minister of Conservation and other relevant Ministers.

If the Minister decides to recommend regulations, a draft would go to Cabinet for approval and would then be implemented by Order in Council. Marlborough District Council would give public notice that the regulations have been made and would amend the Marlborough Sounds Resource Management Plan accordingly and as soon as practicable.

# Appendix 1: Salmon relocation: potential amendments to the Marlborough Sounds Resource Management Plan

This section outlines potential changes to the Marlborough Sounds Resource Management Plan that could be made if the potential relocation proposal goes ahead.

Please note: The potential amendments have been prepared as if all six potential relocation sites will go ahead. The decision about how many potential relocation sites will proceed will not be made until after public consultation on the proposal. If fewer than six potential relocation sites are confirmed, the amendments to the Marlborough Sounds Resource Management Plan will be adjusted to reflect this.

Please note: The public consultation process provides an opportunity for the public to comment not only on each of the potential relocation sites, but also on the potential amendments to the Marlborough Sounds Resource Management Plan for any relocation sites. Feedback on any of the provisions outlined below is therefore welcome.

## Potential Changes to the Marlborough Sounds Resource Management Plan

In the material that follows, changes are shown as underlined when they are new text to be inserted in the Marlborough Sounds Resource Management Plan, and as ~~struckthrough~~ when they show text to be deleted. As Appendices D4, D5 and D6 would be wholly new appendices to the Plan, for ease of reading the text has not been shown as underlined.

The potential amendments can be broadly categorised as:

- Changes to the planning maps to reflect new zoning at potential relocation sites
- Additions and deletions to Chapter 9
- Additions to Chapter 35
- A new Chapter 35B
- New appendices D4, D5, D6 and D7<sup>45</sup>

### Planning maps:

- change the CMZ 1 or CMZ 2 zoning at each of the potential relocation sites to CMZ4

### Chapter 9: Coastal Marine:

#### 9.2 Issue

**Restriction of public access to the coastal marine area due to the private occupation of coastal space.**

...

The marine farm industry that has developed in the Marlborough Sounds is of significant value to the nation in terms of export earnings, and also to the region in terms of the employment and income flows that are derived from the industry. A substantial infrastructure involving processing facilities, ports, harvesting vessels and a multitude of other services has developed based on the marine farm industry and Sounds communities have been revitalised as a result of the development of the industry. All of that infrastructure is reliant upon marine farming which utilises the coastal marine area. The provisions of the Plan recognise that to

<sup>45</sup> Note that Appendix D7 will provide new planning maps for each of the CMZ4 sites, which will be prepared once any potential relocation sites are confirmed.



maintain the strength of the industry, generally it is essential for resource consents to be able to be renewed to continue those marine farming activities. ~~In addition, expansion~~ of the salmon farming industry has been enabled in three locations where the Plan provides for the establishment of new marine farms for salmon, where adverse environmental effects can be satisfactorily avoided, remedied or mitigated. In addition, relocation of existing salmon farm sites from areas of low water flow to deeper areas with higher water flows has been provided for, subject to comprehensive management of potential adverse effects on the environment.

...

In addition, ongoing research is constantly occurring as to other means of aquaculture production involving species other than the present predominant species of mussels and it is possible that some other species may involve lesser effects on the environment through having less visible surface structures. The current Plan provisions are based on the predominant bi-valve marine farm structures. It may become necessary for those provisions to be re-addressed by plan change as has been achieved for ~~three~~ sites for the salmon farming industry.

### 9.2.1 Objectives and Policies

...

Policy 9.2.1.1.17:

Enable the marine farming of salmon by:

- a) identifying three appropriate sites in the Plan as Coastal Marine Zone 3, where salmon farming is a discretionary activity;
- b) providing for the relocation of the following salmon farm sites from low flow areas to appropriate higher flow sites zoned as Coastal Marine Zone 4 in the following priority order (with 1 being the highest priority site to relocate from):
  1. Ruakaka
  2. Otanerau
  3. Waihinau
  4. Forsyth Bay
  5. Crail Bay MFL48
  6. Crail Bay MFL32

...

*Policy ~~9.2.1.1.15~~ 9.2.1.1.17 recognises that three sites have been specifically identified to provide for salmon farming, after being assessed as appropriate locations. These sites are zoned in the Plan as Coastal Marine Zone 3. A further six sites have been identified as providing better environmental conditions for salmon farming than the six existing sites listed in the policy. These new sites have been zoned in the Plan as Coastal Marine Zone 4.*

### 9.2.2 Methods of Implementation

Zoning	The coastal marine area is incorporated into <del>three</del> <u>four</u> coastal marine zones (except for port and marina areas). The limits of the Coastal Marine Zones align with the boundary of the coastal marine area, being the: outer limits of the territorial sea; and the line of mean high water springs and
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	<p>where the line crosses a river, as agreed between the Minister of Conservation and the Council in the Memorandum of Agreement dated 4 December 1995 or any subsequent amendments to that agreement.</p> <p>Rules have been incorporated to control activities and structures in these zones.</p> <p>In Coastal Marine Zone 1 the Plan identifies those zones where marine farms are prohibited in accordance with Policies 9.2.1.1.1 and 9.2.1.1.6. These areas are identified as being where marine farming will have a significant adverse effect on navigational safety, recreational opportunities, natural character, ecological systems, or cultural, residential or amenity values.</p> <p>In Coastal Marine Zone 3 <u>and Coastal Marine Zone 4</u>, the Plan identifies <del>three</del> appropriate sites to provide for the development of salmon farming in accordance with Policy <del>9.2.1.1.15</del> <u>9.2.1.1.17</u>.</p> <p>In addition to the <del>three</del> <u>four</u> coastal marine zones the Plan identifies particular zones for the following activities:</p> <ul style="list-style-type: none"> <li>• Port and harbour activity; and</li> <li>• Marina activity.</li> </ul> <p>Such areas are managed for these activities.</p>
Rules	<p>Rules and resource consents generally provide for activities which require coastal space where the adverse effects of occupation are avoided, remedied or mitigated in terms of the assessment criteria and standards identified.</p> <p>Within Coastal Marine Zone 2 out to 50 metres from mean low water mark, and beyond 200 metres from mean low water mark, marine farms are non-complying activities. In those areas marine farming involving fin fish farming may be appropriate and it is recognised that consent may be granted by a resource consent application.</p> <p><u>Coastal Marine Zone 4 has been established primarily to provide a mechanism to relocate existing salmon farms from areas of low water flow to deeper areas with higher water flows. In order to ensure that coastal space at existing salmon farm sites is surrendered when applications are made for consents for space within Coastal Marine Zone 4, an allocation rule has been included in Chapter 35B of the Plan.</u></p> <p>Rules enable the use of the coastal marine area for defence purposes.</p> <p>Moorings within the Mooring Management Area are managed via the resource consent process as a restricted discretionary activity as the default management process, unless a Bylaw is in place which provides an alternative management framework.</p>

...

*Three specific sites appropriate for new salmon farms have been identified in the Coastal Marine Zone 3. Six specific sites for relocation of existing salmon farms from areas of low water flow have been identified in Coastal Marine Zone 4.*

### 9.3 Issue

**Adverse effects of activities on the natural and physical resources of the coastal marine area.**

#### 9.3.2 Objectives and Policies

...

##### Policy 9.3.2.1.12

Salmon farming in the Marlborough Sounds will be managed to achieve the following additional water quality outcomes in the water column:

- a) To not cause an increase in the frequency, intensity or duration of phytoplankton blooms (i.e. chlorophyll-*a* concentrations greater than or equal to 5 mg/m<sup>3</sup>)
- b) To not cause a change in the typical seasonal patterns of phytoplankton community structure (i.e. diatoms vs. dinoflagellates), and with no increased frequency of harmful algal blooms (HABs) (i.e. exceeding toxicity thresholds for HAB species)
- c) To not cause reduction in dissolved oxygen concentrations to levels that are potentially harmful to marine biota
- d) To not cause elevation of nutrient concentrations outside the confines of established natural variation for the location and time of year, beyond 250m from the edge of the net pens
- e) To not cause a statistically significant shift, beyond that which is likely to occur naturally, from an oligotrophic/mesotrophic state towards a eutrophic state
- f) To not cause an obvious or noxious build up of macroalgal (e.g. sea lettuce) biomass.

**35.3.3 Marine farms for the farming of salmon within Coastal Marine Zone Four**

Marine farms and marine farming of salmon on the following sites in Coastal Marine Zone Four:

Blowhole North

Blowhole South

Waitata mid-channel

Richmond Bay South

Horseshoe Bay

Tio Point

are Limited Discretionary Activities<sup>46</sup> provided the activities are as described in 35.3.3.1.

In terms of this Rule, marine farms and marine farming shall include:

- a) All structures, activities in the coastal marine area, occupation of the common marine and coastal area, disturbance of or damage to the foreshore or seabed, deposition on the foreshore or seabed, and other ancillary activities and structures, associated with marine farms and marine farming of salmon;
- b) All discharges to water or air associated with marine farms and marine farming of salmon, but excluding the discharge of human sewage;
- c) The taking and use of coastal water associated with marine farms and marine farming of salmon.

**35.3.3.1 Requirements<sup>47</sup>**

- a) An application shall be lodged pursuant to Rule 35B.2.1.2 for a coastal permit to occupy the site at the same time that any application is lodged under this rule.
- b) The consent holder shall comply with all the standards<sup>48</sup> listed in Appendix D4, which include requiring the preparation and implementation of a Baseline Plan and Baseline Report prior to any structure placement and, once the marine farm is operational, an annual Marine Environmental Monitoring – Adaptive Management Plan and an Annual Report. The draft documents will be subject to peer review and approval by the Council.
- c) Notwithstanding section 135(1)(a) of the Resource Management Act 1991, the consent holder shall not transfer any part of the consent holder's interest in a coastal permit to any other person without the written approval of the Council. The Council

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<sup>46</sup> The Resource Management Act 1991 classifies activities into types – permitted, controlled, restricted discretionary, discretionary, non-complying and prohibited – as described in section 87A. For the avoidance of doubt, a Limited Discretionary Activity in the Marlborough Sounds Resource Management Plan is a restricted discretionary activity under section 87A of the Resource Management Act 1991.

<sup>47</sup> For a restricted discretionary activity, section 87A of the Resource Management Act 1991 states that the activity must comply with the requirements, conditions and permissions, if any, specified in the plan.

<sup>48</sup> For the avoidance of doubt, 'standards' as specified in the Marlborough Sounds Resource Management Plan are 'conditions' under section 87A of the Resource Management Act 1991.



will satisfy itself that the transferee is capable of complying with the standards in the plan and coastal permit relating to the marine farm before approving the transfer.

#### 35.3.3.2 Matters To Which Discretion is Limited

The Council may grant or decline the coastal permit application for a marine farm and marine farming of salmon at a Site in Coastal Marine Zone 4 and, if granted, impose conditions only in respect of the following matters to which the Council has limited its discretion:

- a) Effects on values in the coastal environment that are of significance to tangata whenua.
- b) The layout, positioning and operation of structures within the Site:
  - to ensure continued reasonable public access (including recreational access) in the vicinity of the marine farm;
  - to address navigational safety, including the provision of navigation warning devices and signs.
- c) Structural safety and security of the structures, including the anchoring systems.
- d) In support of b) and c), the preparation and contents of one or more plans to be approved by the Council and implemented by the consent holder dealing with the matters in b) and c) at the design, establishment, and operation stages of the development of the marine farm.
- e) Effects on water quality caused by a marine farm and marine farming of salmon at Tio Point, particularly on embayments.
- f) Definition of the extent of the Zone of Maximum Effects (ZME) and the Outer Limit of Effects (OLE) (consistent with any guidelines established for the management of the benthic effects of salmon farming) for the purposes of ensuring compliance with benthic quality standards.
- g) Except at Tio Point, the preparation and contents of a King Shag Management Plan (including a response mechanism if there is a decline in King Shag numbers) which has the objective of avoiding adverse effects of the marine farm on King Shag, being an indigenous taxa listed as threatened in the New Zealand Threat Classification System.
- h) The preparation and contents of other management plan(s) as considered desirable by the Council and to be implemented by the consent holder, taking into account the following five management plans which are provided for in Appendix D4, existing management plans for other marine farms operated by the same consent holder and whether they may be amended or amalgamated to cover the required subject matter:
  - Marine Mammal and Shark Management Plan
  - Biosecurity Management Plan
  - Residential Amenity Management Plan
  - Wildlife Nuisance Management Plan
  - Solid Waste Management Plan.

- i) The duration, lapsing and transfer of the coastal permit.
- j) Review of coastal permit conditions, including to give effect to any best management practice guidelines for salmon farms in the Marlborough Sounds.
- k) Monitoring and reporting requirements.
- l) Administrative charges, including any coastal occupation charges.

35.3.3.3 Applications for resource consent under Rule 35.3.3 will be not be publicly notified.

#### **35.4 Discretionary Activities**

Application must be made for a Discretionary Activity for the following:

- Any activity listed as a Permitted Activity and either adversely affecting or being affected by any hazard area identified on the Planning Maps as a hazardous area;
- Activities listed as Permitted or Controlled Activities, which do not comply with the Standards specified for those activities, other than marine farms specified as Limited Discretionary Activities in Rule 35.3.1, or swing moorings specified as Limited Discretionary Activities in Rule 35.3.2;
- Commercial activities;
- Discharge of human sewage;
- Discharges to air;
- Discharges to water;
- Occupation of the coastal marine area;
- Structures in the coastal marine area used in the petroleum and chemical industry;
- Disturbance of foreshore and/or seabed, including removal of sand, shingle, shell or other material;
- Marine farms in Coastal Marine Zone Two complying with the standards specified in Rule 35.4.2.9 other than marine farms specified as Controlled Activities in Rule 35.2.5, or Limited Discretionary Activities in Rule 35.3.1;
- Marine farms previously authorised for the farming of species other than salmon in Coastal Marine Zone Four complying with the standards specified in Rule 35.4.2.10A;
- Marine farms in Coastal Marine Zone 1 which are listed in Appendix D2;
- Placement of swing moorings outside Waikawa Bay;
- Swing moorings in Waikawa Bay outside of the Mooring Management Areas and which were either consented to prior to this rule becoming operative or which are for providing access to immediately adjoining properties in Waikawa Bay;
- Reclamation;
- Structures in the coastal marine area more or less parallel to mean high water springs;
- Structures in the coastal marine area oblique or perpendicular to mean high water springs;
- Structures which impound or effectively contain the coastal marine area; and
- Use of surface water within the National Transportation Route
- Marine Farms and Marine Farming in Coastal Marine Zone Three complying with the standards specified in Rule 35.4.2.10.

### **35.4.2.10A Marine farms for species other than salmon in Coastal Marine Zone Four**

Marine farms for the farming of species other than salmon where the marine farm is authorised by a current Coastal Permit as at 16 January 2017, provided that the activity conforms to the following standards.

#### **Standards**

a) The standards as listed under Rule 35.4.2.9.

### **35.4.2.10A.1 Assessment Criteria**

**35.4.2.10A.1.1** The assessment criteria are those listed under Rule 35.4.2.9.1.

### **35.4.2.10A.2 Terms**

The terms are those listed under Rule 35.4.2.9.2.

## **35.5 Non-Complying Activities**

- Any activity other than a Prohibited Activity which is neither a Permitted, Controlled, or Discretionary Activity shall be deemed to be a Non-Complying Activity;
- Deliberate introduction of exotic or introduced plants into the coastal marine area;
- Depositing material on the foreshore or seabed;
- Discharges to the coastal marine area;
- Marine farms within Coastal Marine Zone Two other than marine farms specified as Controlled Activities in Rule 35.2.5 or Limited Discretionary Activities in Rule 35.3.1 or Discretionary Activities pursuant to Rule 35.4:
  - a) inside a line drawn 50 metres from mean low water mark at right angles to a line normal to the nearest part of mean high water mark; or
  - b) beyond a line drawn 200 metres from mean low water, at right angles to a line normal to the nearest part of mean high water mark (refer Figure 35.1: Measurement of Marine Farm from Shore).
- Marinas within Waikawa Bay which are located outside the Marina Zone.
- Residential Activity;
- Structures in the coastal marine area more or less parallel to mean high water springs;
- Structures in the coastal marine area oblique or perpendicular to mean high water springs;
- Structures in the coastal marine area used in the petroleum and chemical industry;
- Structures which impound or effectively contain the coastal marine area; and
- Subdivision.

- Marine farms within Coastal Marine Zone 3 other than marine farming provided for under Rule 35.4.2.10.1.
- Marine farms for the farming of salmon within Coastal Marine Zone 4 other than marine farming provided for under Rule 35.3.3, as provided for under Rule 35.5.5;
- Marine farms previously authorised (by a current Coastal Permit as at 16 January 2017) for the farming of species other than salmon within Coastal Marine Zone Four beyond a line drawn 200 metres from mean low water, at right angles to a line normal to the nearest part of mean high water mark (refer Figure 35.1: Measurement of Marine Farm from Shore).

### **35.5.5 Marine Farms for the farming of salmon within Coastal Marine Zone 4**

35.5.5.1 An application shall be lodged pursuant to Rule 35B.2.1.2 for a coastal permit to occupy the site at the same time that any application is lodged under this rule.

### **35.6 Prohibited Activities – being activities for which no resource consent shall be granted**

- Dumping of hazardous waste substances onto land and from onshore into the coastal marine area;
- The dumping of waste and litter from onshore (including shell, offal or any other matter) into the coastal marine area;
- Marine farms in Coastal Marine Zone One other than marine farms specified as Controlled Activities in Rule 35.2.5 or Limited Discretionary Activities in Rule 35.3, or Discretionary Activities not complying with the standards specified for marine farms as Controlled Activities;
- Marine farms in Coastal Marine Zone Two at the sites identified in Appendix D5 once the consents as identified in Appendix D5 (or any subsequent consents issued where the application constituted a renewal of the consents identified in Appendix D5) have been surrendered;
- Marine farms for the farming of finfish within Coastal Marine Zone Two at the sites identified in Appendix D6 once the consents as identified in Appendix D6 (or any subsequent consents issued where the application constituted a renewal of the consents identified in Appendix D6) have been surrendered;
- Marine farms for the farming of salmon within Coastal Marine Zone Four other than marine farming provided for under Rule 35.3.3 or Rule 35.5;
- Marine farms for the farming of species other than salmon within Coastal Marine Zone Four, other than marine farming provided for under Rules 35.4 and 35.5;
- Rafting of logs as a means of transportation.
- The combustion of:
  - materials associated with the recovery of metals from insulated electrical cables; or
  - materials and metals used in motor vehicles; or
  - any other PVC plastic, or rubber tyres, treated timber, or agricultural chemical wastes.
- Use of surface water within that part of Queen Charlotte Sound not on the National Transportation Route by High speed ships, or ships that exceed 500 gross registered tonnes, which are travelling at ship speeds greater than 15 knots.

## **Chapter 35B**

### **35B.0 Allocation of Space in New Salmon Farming sites**

#### **35B.1 Preamble**

This section of the Plan provides a specific method for the allocation of rights to occupy coastal space within salmon farming sites listed in Rule 35.3.3.

Part 7A of the Act contains provisions about managing occupation of the common marine and coastal area, including general provisions about authorisations to apply for coastal permits to occupy space. Responsibilities of councils, the Minister of Conservation and the Minister of Aquaculture are also set out in this part of the Act.

The default allocation mechanism for the occupation of space in the common marine and coastal area is the ‘first in first served’ process that normally applies to resource consent applications. Section 165G of the Act states that ‘A regional coastal plan or proposed regional coastal plan may provide for a rule in relation to a method of allocating space in the common marine and coastal area for the purposes of an activity, including a rule in relation to the public tender of authorisations or any other method of allocating authorisations’.  
Chapter 35B of the Plan sets out such a rule, for salmon farming sites listed in Rule 35.3.3.

The Marlborough Sounds Resource Management Plan seeks to ensure that salmon farming within the Marlborough Sounds is managed to meet water quality outcomes (Policy 9.3.2.1.12), while enabling marine farming in appropriate places in the waters of the Sounds (Policy 9.2.1.14). Section 5 of the RMA recognises the need to safeguard life-supporting capacity, and to avoid, remedy, or mitigate adverse effects, but also seeks to enable people and communities to provide for their social, economic and cultural wellbeing.  
Farm sites located in low flow areas can cause adverse effects on the environment if operated at levels that provide a sufficient economic return. Recognising the need to improve environmental outcomes for salmon farming in the Marlborough Sounds while retaining the economic viability of the industry, the rule contained in this section of the Marlborough Sounds Resource Management Plan facilitates the relocation of existing low flow sites to higher flow sites.

#### **35B.2 General Rules**

##### **35B.2.1 Alternative Allocation Method for the Right to Apply for Available Water Space in New Salmon Farming Sites**

###### **35B.2.1.1 Circumstances under which the Alternative Allocation Method will Apply**

Rule 35B.2.1.2 shall only be used for coastal permits for marine farming within the following salmon farming sites:

- Blowhole Point North
- Blowhole Point South
- Waitata mid-channel



- Richmond Bay South
- Horseshoe Bay
- Tio Point

### **35B.2.1.2 Alternative Allocation Method**

Under the circumstances specified in Rule 35B.2.1.1, the right to apply for a coastal permit for salmon farming shall be limited to the person who holds a consent for the corresponding identified site as follows:

[Note: the exact wording is to be determined following public consultation, when the exact potential relocation sites are known and a definite site swap can be defined. If fewer than six relocation sites are still being considered after public consultation, then this rule may look like the second bullet point]

- The application is for the X CMZ4 site and the surrender of consents for the Y CMZ2 site
- The application is for the X CMZ4 site and the surrender of consents for the Y and Z CMZ2 sites

provided that the application conforms with the following standards:

- a) Consents for the existing salmon farm sites shall be surrendered and all structures removed from the sites prior to any fish being put in the water at the CMZ4 salmon farming site
- b) The area of sea pens on the CMZ4 site does not exceed the previous area of sea pens on the corresponding CMZ2 or CMZ1 site
- c) The following priority order of consent surrenders shall apply (with 1 being the highest priority site to relocate from):
  - 1. Ruakaka CMZ1 site
  - 2. Otanerau CMZ2 site
  - 3. Waihinu CMZ2 site
  - 4. Forsyth Bay CMZ2 site
  - 5. Crail Bay MFL48 CMZ2 site
  - 6. Crail Bay MFL32 CMZ2 site

## Appendix D4: Standards under Rule 35.3.3.1(b)

### General

1. Marine farming shall be limited to the farming of King Salmon (*Onchorynchus tshawytscha*).
2. All salmon shall be from roe sourced in New Zealand.

### Occupancy

3. The occupancy and activity shall be limited to the area shown on the plans in Appendix D7.

**Note:** While the occupancy and activity associated with the marine farm and marine farming will occur within the area specified in Condition 3, some effects arising from the activities may be experienced beyond the boundary of this area. For example, the marine farm will be able to be seen and heard from beyond the boundary of the area, and some waste material will travel beyond the boundary.

4. All salmon farm pens (other than temporary pens for transferring salmon to or from the Site) shall be located within the Pen Area Boundary for the relevant Site shown on the plans in Appendix D7.

### Noise

5. All marine farming shall be conducted so as to ensure that noise arising from such activities does not exceed the following noise limits when measured no closer than 250 metres from any marine farm surface structure:

0700 hours – 2200 hours Monday to Friday and 0700 hours – 1200 hours Saturday	55 dBA L10
On any day between 0700 hours and 2200 hours	No Lmax limit
At all other times including any public holiday	45 dBA L10, and 75 dBA Lmax

All marine farming shall be conducted so as to ensure that noise arising from such activities does not exceed the following noise limits when measured at the Notional Boundary of dwellings existing at 16 January 2017:

0700 hours – 2200 hours Monday to Friday and 0700 hours – 1200 hours Saturday	50 dBA L10
On any day between 0700 hours and 2200 hours	No Lmax limit
At all other times including any public holiday	40 dBA L10, and 75 dBA Lmax

6. Noise shall be measured in accordance with NZS 6801:2008. Adjusted levels shall be determined in accordance with NZS 6802:2008. Any construction activities shall meet standards specified in NZS 6803:1999.
7. The following activities shall be exempt from the noise standard contained in Condition 5:
  - i) Noise generated by navigational aids, safety signals, warning devices, or emergency pressure relief valves;

- ii) Noise generated by emergency work arising from the need to protect life or limb or prevent loss or serious damage to property or minimise or prevent environmental damage;
  - iii) Noise ordinarily generated by the arrival and departure of vessels servicing a marine farm.
8. No outdoor radios or similar external speakers shall be used on any marine farm.

## Structures

9. The structures shall be limited to moorings, anchors, ropes, net pens and barges, floats and lights and other necessary navigational aids associated with the farming of the approved species within the boundaries of the area shown on the plans in Appendix D4. All structures shall be situated and secured so as to remain within the boundaries of the consent area at all times.

10. The maximum area of sea pens at each marine farm Site in Coastal Marine Zone 4 shall not exceed:

Blowhole North	1.5 hectares
Blowhole South	1.5 hectares
Waitata mid-channel	2 hectares
Richmond Bay South	1.5 hectares
Horseshoe Bay	0.75 hectares
Tio Point	0.75 hectares

11. The maximum area of surface structures, including barges, across all the marine farm Sites in Coastal Marine Zone 4 shall not exceed 9 hectares.

12. (a) Within the following Sites, there shall be no more than 1 feed/accommodation barge:

Blowhole North  
 Blowhole South  
 Richmond Bay South  
 Horseshoe Bay  
 Tio Point

- (b) Any feed/accommodation barge at a Site listed in condition 12(a) shall have a maximum footprint of 280m<sup>2</sup> and a maximum height of 7.5m above water level when fully laden.
- (c) Any feed/accommodation barge at a Site listed in condition 12(a), including its roof and all ancillary features (such as drain pipes) shall be finished in non-reflective materials and painted in a dark colour. Dark coloured curtains, blinds or shutters shall be provided for the windows of rooms used for staff accommodation.

13. At the Waitata Mid-Channel Site there shall be no more than one feed barge that is:
  - (a) circular or similar in appearance;
  - (b) no more than 15 metres in diameter;
  - (c) no more than 3 metres in height above water level at all times;
  - (d) finished in non-reflective materials and painted in a dark colour.
14. Within the following Sites, only circular net pens shall be used:  
Blowhole North  
Blowhole South  
Waitata mid-channel
15. Net pens and exterior above water metal structures (other than surface walkways) shall be painted or finished in dark recessive colours.
16. Black or similar dark colours shall be used for predator nets, grower nets and bird netting which are normally above-water.
17. Any submerged artificial lighting set up in any net pen shall not be comprised of any more than the luminance of nine 1000 watt halide underwater lights.
18. 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.

## Discharge

### *Initial annual discharge*

19. Subject to Condition 20, the initial annual discharge of fish feed within each Site shall not exceed:

Blowhole North	2250T
Blowhole South	2500T
Waitata mid-channel	3500T
Richmond Bay South	2500T
Horseshoe Bay	1000T
Tio Point	1000T

20. The total of the initial annual discharge of fish feed at the Blowhole North, Blowhole South, Waitata mid-channel, Richmond Bay South and Horseshoe Bay farm Sites shall not exceed 6000 tonnes per annum.

### *Increases in feed discharges in Pelorus Sound if total discharges are less than 6000T/annum*

21. While the total of the initial annual discharge of fish feed at the Blowhole North, Blowhole South, Waitata mid-channel, Richmond Bay South and Horseshoe Bay farm Sites remains below 6000 tonnes per annum, any increases in feed discharges shall comply with Conditions 22 to 24.
22. Any increase in feed discharged (from one year to the next) at any Site shall not exceed the relevant step in the Maximum Increase in Feed Discharge specified in Table 1 and shall not result in the total discharge from the Sites exceeding 6000 tonnes per annum.

**Table 1: Maximum increase in feed discharge for CMZ4 Sites in Pelorus Sound**

Tonnes/Site	BHN	BHS	WMC	RBS	HSB
Increase 1	750	825	1050	825	250
Increase 2	500	550	750	550	125
Increase 3	300	375	350	375	125
Increase 4	350	375	350	375	
Increase 5	350	375		375	

23. The annual tonnage of feed discharged to the marine farm may only be increased where the discharge has been within 85 – 100% of:
- (a) the discharge specified under Condition 19; or
  - (b) the discharge calculated using Table 1;



for a period of at least 3 years prior to any proposal to increase the annual tonnage of feed discharged, and where the requirements of Conditions 36, 38 and 40 (relating to compliance with Environmental Quality Standards) have been met.

24. In any year, the annual discharge of fish feed within each Site shall not exceed:

Blowhole North	4500T
Blowhole South	5000T
Waitata mid-channel	6000T
Richmond Bay South	5000T
Horseshoe Bay	1500T

*Increases in feed discharges in Pelorus Sound if total discharges are 6000T/annum or more*

25. When the total of the annual discharges of fish feed at the Blowhole North, Blowhole South, Waitata mid-channel, Richmond Bay South and Horseshoe Bay farm Sites has been within 85 – 100% of 6000 tonnes per annum for a period of at least three years any further increases in feed discharges shall comply with Conditions 26 – 28.
26. Any increase in feed discharged (from one year to the next) shall not exceed the relevant step in the Maximum Increase in Feed Discharge specified in Table 1 for each Site, and shall not exceed the increase outlined in the Maximum Overall Increase in Feed Discharge specified in Table 2 for all the Sites in total.

**Table 2: Maximum overall increase in feed discharge for CMZ4 Sites in Pelorus Sound**

All Pelorus Sound Sites	Overall limit on discharges from all Sites (tonnes/annum)
Start	6000
Feed increase steps	1800

27. The annual tonnage of feed discharged to the marine farm may only be increased where the discharge has been within 85 – 100% of:

- (a) the discharge specified under Condition 19; or
- (b) the discharge calculated using Tables 1 and 2;

for a period of at least 3 years prior to any proposal to increase the annual tonnage of feed discharged, and where the requirements of Conditions 36, 38 and 40 (relating to compliance with Environmental Quality Standards) have been met.

28. In any year, the annual discharge of fish feed within each Site shall not exceed:

Blowhole North	4500T
Blowhole South	5000T
Waitata mid-channel	7000T
Richmond Bay South	5000T
Horseshoe Bay	1500T

*Increases in feed discharges in Tory Channel*

29. Any increase in feed discharged (from one year to the next) at any Site shall not exceed the relevant step in the Maximum Increase in Feed Discharge specified in Table 3.

**Table 3: Maximum increase in feed discharge for CMZ4 Sites in Tory Channel**

	<b>Tio</b>
Increase 1	1000
Increase 2	300
Increase 3	150
Increase 4	150

30. The annual tonnage of feed discharged to the marine farm may only be increased where the discharge has been within 85 – 100% of:

- (a) the discharge specified under Condition 19; or
- (b) the discharge calculated using Table 3;

for a period of at least 3 years prior to any proposal to increase the annual tonnage of feed discharged, and where the requirements of Conditions 36, 38 and 40 (relating to compliance with Environmental Quality Standards) have been met.

31. In any year, the annual discharge of fish feed at the Tio Point Site shall not exceed 1600 tonnes

*Additional discharge conditions*

32. Any effects on water quality arising from the process outlined in Conditions 19 – 31 above shall be monitored following the process outlined in Conditions 43 - 45 and using a minimum of six real time monitoring buoys deployed at sites determined using the process outlined in Conditions 43 - 45.
33. A feed log detailing monthly volumes of feed discharge, composition (percentage protein, carbohydrate, lipid, nitrogen and phosphorus) and the location of the discharge shall be established and maintained.

34. The maximum greywater discharge shall not exceed 1.0 cubic metres per day from any Site that contains a feed/accommodation barge. An appropriate system shall be operated at the marine farm to quantify the volume of greywater discharged, which can be measured by proxy (i.e. by measuring the amount of fresh potable water which is brought onto the barge and assuming it is all discharged via the greywater system).

### **Odour management**

35. The consent holder shall, prior to the first discharge of feed to the marine farm, have in place and implement operational procedures to implement best management practices to:
- a) ensure that, as far as practicable, filling of the 'mort' bin (storing dead fish) does not occur during still air conditions;
  - b) establish target times for cleaning the grower nets once they have been raised, to minimise the potential for odour from dirty nets;
  - c) ensure that, as far as practicable, there is only one grower net being lifted and cleaned at one time, to minimise the potential for odours from this activity.

### **Environmental quality standards**

36. Subject to Condition 37, the marine farms at the Blowhole Point North, Blowhole Point South, Waitata mid-channel, Richmond Bay South and Horseshoe Bay Sites shall be operated at all times in such a way as to achieve the following initial water quality standards (WQS):
- a) concentrations of Chlorophyll-*a* in the receiving water not exceeding 3.5 mg m<sup>-3</sup>;
  - b) concentrations of Total Nitrogen in the receiving water not exceeding 300 mg m<sup>-3</sup>;
  - c) concentrations of Dissolved Oxygen above an average 70% saturation within 250 metres of the edge of the net pens and an average 90% saturation beyond 250 metres from the edge of the net pens.

Notwithstanding that these initial water quality standards are specified in the plan, these standards can be updated by the Council through a review of conditions and incorporated within the coastal permit.

**Note:** Condition 36 does not apply to the Tio Point Site. Matter of discretion 35.3.3.2(c) provides for water quality effects at the Tio Point Site to be considered when a resource consent is applied for.

37. In the event of any exceedance of the water quality standards outlined in Condition 36 or as updated by the Council, the following steps shall be taken:
- a) A first level response requiring investigation, further monitoring and/or analysis to determine whether the operation of the marine farm is causing the relevant WQS not to be achieved. In that respect:
    - i) If dissolved oxygen concentrations do not achieve the WQS specified in Condition 36 an initial investigation to consider differences between

far-field control and farm Sites to determine whether further investigation is necessary

- ii) If further investigation is necessary, further monitoring and/or analysis to determine whether the operation of the marine farm is causing the relevant WQS not to be achieved
  - iii) Where the farm is shown to be the cause of the exceedance, a second level response as outlined in b).
  - b) A second level response requiring a plan of action and subsequent implementation of that plan as soon as practicable, with clear timeframes to reduce effects on the water column and achieve full compliance with the WQS, through reduced stocking on the marine farm following the next harvest of salmon on the marine farm.
38. Subject to Condition 39, the marine farm shall be operated at all times in such a way as to achieve the following average Benthic Quality Standards (BQS) in the seabed:
- a) the enrichment stage (ES) score below the net pens, i.e. the Zone of Maximum Effect (ZME), shall not exceed 5.0;
  - b) no more than one replicate core with no taxa in the ZME;
  - c) no obvious spontaneous out-gassing of hydrogen sulphide and methane in the ZME;
  - d) the coverage of the *Beggiatoa* bacteria may not be greater than localised and patchy in distribution in the ZME;
  - e) the ES score at the Outer Limit of Effect (OLE), shall be less than 3.0 at all times;
  - f) subject to Condition 39, in the event of any exceedance of the benthic quality standards outlined in Condition 38(a) – (e) a plan of action shall be prepared and implemented as soon as practicable, with clear timeframes to reduce effects on the benthic environment and achieve full compliance with the BQS.

Notwithstanding that these Benthic Quality Standards are specified in the plan, these standards can be updated by the Council through a review of conditions and incorporated within the coastal permit.

**Note:** Average Benthic Quality Standards are calculated from the results of the number of samples that are taken from monitoring stations within the ZME and the OLE on any one sampling occasion.

39. In the event that the lower 95% confidence level for overall ES is greater than 5.6 then the consent holder must:
- a) Remove stock and fallow the Site within 4 months from the date the consent holder became aware of the non-compliance (or 5 months where retesting has occurred), or at the end of the production cycle, whichever is the later; and
  - b) Not introduce new stock to the farm until the farm is within the relevant BQS; and

- c) Ensure at the time of restocking that the stocking plan is appropriate to allow the Site to meet the required BQS in future surveys.
40. Copper and Zinc levels measured in the ZME shall not exceed the Australian and New Zealand Environment and Conservation Council (ANZECC) 2000 Interim Sediment Quality Guidelines High Level (ISQG-High) for the total recoverable fraction of these metals.

### **Marine Environmental Monitoring, Adaptive Management and Reporting**

41. The following plans and reports shall be prepared:
- a) Prior to the initial placement of the first structure(s) at the marine farm, a **Baseline Plan**, as outlined in Condition 43 to specify the monitoring and analysis to be undertaken in order that baseline information can be obtained and analysed prior to the initial placement of the first structure(s) at the marine farm;
  - b) Prior to initial placement of the first structure(s) at the marine farm, a **Baseline Report**, as outlined in Condition 44;
  - c) For each year of operation of the marine farm, a **Marine Environmental Monitoring – Adaptive Management Plan (MEM-AMP)** to provide a summary of the relevant recommendations from the previous year's Baseline Report or Annual Report, and specify the proposed monitoring and marine farm management actions for the following year. The MEM-AMP may be prepared as one Plan jointly with the MEM-AMP(s) for other marine farms managed by the same consent holder.
  - d) For each year of operation of the marine farm, an **Annual Report** to provide the details of the monitoring results from the previous year, an analysis of the monitoring results (including in terms of compliance with the EQS), and recommendations for changes to the monitoring and marine farm management actions for the following year. The Annual Report may be prepared jointly with Annual Reports for other marine farms in the same geographic area (being Queen Charlotte Sound/Tory Channel or Pelorus Sound) managed by the same consent holder.
42. An independent person (or persons) with appropriate knowledge and expertise shall be engaged to prepare the **Baseline Plan** and **Baseline Report**, the **MEM-AMP** and the **Annual Report**.
43. The **Baseline Plan** shall include, but not be limited to, the following:
- a) Quantitative and qualitative mapping of soft-sediment habitats and communities across the occupancy and activity area specified in Condition 34; and across the ZME and OLE, including replicate data for the primary environmental variables from each of the proposed on-going monitoring stations and at appropriate reference stations;
  - b) A synthesis and review of all available existing water quality data relevant to the enrichment status of:



- Pelorus Sound
- Tory Channel and Queen Charlotte Sound

in order to provide a historical baseline of water quality conditions;

- c) Water column monitoring for nutrient (NH<sub>4</sub>-N, NO<sub>3</sub>-N, NO<sub>2</sub>-N, DRP, Si, TN and TP) and chlorophyll-*a* concentrations, phytoplankton composition and biomass, salinity, clarity, temperature, turbidity and dissolved oxygen (DO) at the following locations:
- Near-farm locations within 1 km from the net pens;
  - Locations within Pelorus Sound and Queen Charlotte/Tory Channel that are expected to have the greatest potential for marine farm-related cumulative enrichment effects (particularly where marine farms are located in proximity to one another and/or as indicated by spatially explicit nutrient modelling or other modelling considered necessary by the Peer Review Panel), except where these areas have already been subject to monitoring under the Baseline Plan prepared for the Waitata, Kopāua and Ngamahau Sites;
  - Locations further away from marine farms or groups of marine farms in Outer Pelorus Sound and in Queen Charlotte Sound/Tory Channel or relevant surrounding areas that are expected to have progressively lesser marine farm-related cumulative enrichment effects (as indicated by spatially explicit nutrient modelling or other modelling considered necessary by the Peer Review Panel), except where these areas have already been subject to monitoring under the Baseline Plan prepared for the Waitata, Kopāua and Ngamahau Sites;
  - Locations that are identified as being of high ecological value.

The above water column data shall be collected at least monthly at these locations over one year (this shall be required for up to two years if recommended by the Peer Review Panel) prior to the first discharge of feed to the marine farm, provided that this frequency could be reduced by the Council in whole or in part, depending on the availability of existing water column data (which can suitably substitute). The appropriateness of any reduction is to be specifically considered by the Peer Review Panel (as part of its review of the **Baseline Plan**).

The monitoring stations for this water column monitoring shall be established as long-term monitoring stations for the purposes of undertaking the long-term water column monitoring required by the MEM-AMP. The precise location of the long-term monitoring stations and the range of specific nutrient parameters monitored may, however, be adjusted over time in response to monitoring results under the MEM-AMP and/or in response to modelling considered necessary by the Peer Review Panel.

- d) Quantitative and qualitative baseline monitoring (for potential biodepositional effects following marine farm operation) of habitats that support notable biological features within 1km of the marine farm ("reef" monitoring), including any areas of blue cod habitat or any areas identified as customary

kaimoana gathering areas, as well as comparable habitats at appropriate reference sites. The monitoring shall be undertaken two times during one year. For the purposes of this condition "notable biological features" shall include but not be limited to areas of significant reef, tubeworm mounds and hydroid colonies.

- e) Quantitative and qualitative baseline monitoring (for potential seabed enrichment effects following marine farm operation) at soft sediment sites in neighbouring bays near to, and removed from, the marine farm, chosen based on potential exposure to increased biodeposition including any areas in those bays identified as customary kaimoana gathering areas. This monitoring shall be undertaken at a selection of representative soft sediment sites, which may also double as reference sites for near-farm monitoring (see Condition 43a), and shall be undertaken two times during one year. The same monitoring may be undertaken for a group of marine farms, as it will provide baseline information for all marine farms in that group.
- f) Quantitative and qualitative baseline monitoring (for potential effects on macroalgal biomass from biodeposition and/or nutrient enrichment) of ephemeral macroalgae (e.g. *Ulva* sp.), benthic algal films and perennial algae (e.g. *Hormosira banksii*) percentage cover and the abundance of grazing invertebrates (e.g. cats' eyes snails (*Turbo smaragdus*) and Kina (*Evechinus chloroticus*)) on intertidal and shallow subtidal rock reefs, including any reefs identified as customary kaimoana gathering areas. Monitoring shall be undertaken two times during one year at the following locations:
  - i. At or near locations expected to have the greatest potential for marine farm related cumulative enrichment effects (either within 1 km of the marine farm or in neighbouring bays);
  - ii. At or near locations further away from the marine farm or groups of marine farms in locations that are expected to have less marine farm-related cumulative enrichment effects.

44. The **Baseline Report** shall include the following:

- a) Presentation of the results from, and analysis of, the baseline monitoring required by the **Baseline Plan**, including the results of the synthesis and review of all available existing water quality data relevant to the enrichment status;
- b) Any recommendations as to the specific location or installation of marine farm anchoring structures;
- c) Any recommendations regarding ongoing monitoring following the initial placement of the first structure(s) at the marine farm and the first discharge of feed to the marine farm;

45. The **MEM-AMP** shall specify the following:

- a) A summary of the recommendations from the **Baseline Report** (in the case of the first **MEM-AMP** for the marine farm) or from the previous year's **Annual**

**Report** regarding marine farm management actions and monitoring (including any increases or decreases in the tonnage of feed to be discharged);

- b) The water column monitoring stations;
- c) The methods (including the processes to be followed) to be used in assessing water quality;
- d) The benthic monitoring stations;
- e) The timing of the monitoring of the ZME and OLE;
- f) The environmental parameters to be monitored;
- g) The monitoring proposed for any identified notable biological features, intertidal or sub-tidal shallow reefs and/or areas identified as customary kaimoana gathering areas, including identifying any long-term and short-term changes in community structure and health;
- h) The monitoring proposed:
  - i) for the effects of submerged artificial lighting
  - ii) of the size and composition of aggregations of pelagic and demersal fish beneath the marine farm, and
  - iii) to improve understanding of the potential for key heavy metal and organohalogenated contaminants of public-health interest in long-lived benthic-pelagic fish species of recreational, commercial or customary interest, residing in the near vicinity of the marine farm;
- i) A site-specific account of any recommendations or management responses from the previous year; and
- j) Detailed sampling methods.

46. The **Annual Report** shall include, but not be limited to, the following:

- a) A statement as to the tonnage of feed and nitrogen discharged each month over the previous year;
- b) The results of all the monitoring undertaken in the previous year;
- c) A comprehensive analysis of the results of that monitoring, including:
  - i. whether the monitoring information obtained is fit for the purpose of determining the effects from the operation of the marine farm and for determining whether compliance with the EQS specified in Conditions 36, 38 and 40 is achieved;
  - ii. whether there are any evident trends in terms of effects from the operation of the marine farm.

*EQS- Water Column*

- d) An assessment and conclusions as to whether the WQS specified in Condition 36 have, or have not, been complied with, for the previous year.

- e) Recommendations as to any amendments to management practices (including any increases or decreases in the tonnage of feed to be discharged) at the marine farm, in order to ensure that the WQS specified in Condition 36 continue to be complied with. In the case of non-compliance with the WQS, recommendations as to monitoring, analysis and/or management responses in accordance with the requirements of the MEM-AMP.

*EQS- Deposition on the Seabed*

- f) An assessment and conclusions as to whether compliance with the EQS specified in Condition 38 has, or has not, been achieved for the previous year.
- g) Recommendations as to any amendments to management practices (including any increases or decreases in the tonnage of feed to be discharged) at the marine farm in order to ensure that the EQS in Condition 38 are complied with.

*EQS- Copper and Zinc Levels*

- h) An assessment and conclusions as to whether compliance with the ANZECC (2000) ISQG-High criteria for copper and zinc set out in Condition 40 has, or has not, been achieved for the previous year.
- i) Where the ANZECC (2000) ISQG-Low criteria for copper and zinc have been exceeded, recommendations as to any amendments to monitoring and management actions at the marine farm.

*Determination of WQS*

- j) The Annual Report will include the relevant reviews of the near farm and wider-scale water column and ecosystem monitoring results and of WQS and the associated hierarchy of responses to breaches of the WQS as specified in the MEM-AMP.
- k) Following the first three years of operation of the marine farm, the Annual Report may review the initial WQS outlined in Condition 36 and recommend amendments to the WQS. The WQS may then be reviewed through the Annual Report every subsequent three years unless any other Annual Report necessitates earlier review. Any recommended amendment to the WQS shall ensure that the water quality outcomes specified in Policy 9.3.2.1.12 will continue to be met.

Prior to specifying amendments to the WQS and responses, the consent holder shall consult with the Department of Conservation.

*Other Recommendations*

- l) Where identified as a result of the monitoring, any recommendations for other actions to be undertaken to address potential effects from the operation of the marine farm, including to avoid, remedy or mitigate any significant adverse effects from the operation of the marine farm.
- m) Any other recommendations for amendments to the monitoring programme for the following year.

47. Prior to finalising the plans and reports specified in Condition 41, they shall be provided in draft form to the Peer Review Panel under Condition 51 for its review, assessment, recommendations and reports, consistent with its approach to those Sites. Particular regard shall be had to any recommendations from the Peer Review Panel in finalising the plans and reports. The plans and reports shall identify how this has been done, if any recommendations have not been adopted and the reasons why.
48. Having had particular regard to any recommendations from the Peer Review Panel, the following final plans and reports shall be provided to the Council:
- a) The **Baseline Plan**;
  - b) The **Baseline Report**; and
  - c) Any **Annual Report** which includes:
    - i. any proposals for changes in any WQS;
    - iii. any increase in the maximum annual tonnage of feed that may be discharged to the marine farm, consistent with Conditions 19 - 31.

The monitoring and analysis required in terms of the **Baseline Plan** shall not be commenced until the **Baseline Plan** has been approved by the Council.

No structure(s) shall be placed on the marine farm until the **Baseline Report** has been approved by the Council.

No change may be made to any WQS, and there shall be no increase in annual tonnage of feed that may be discharged to the marine farm, until the relevant aspects of the **Annual Report** that includes that/those recommendation(s) is approved by the Council.

49. Other than as specified in Condition 48, having had particular regard to any recommendations from the Peer Review Panel, the following plans and reports specified in Condition 41 shall be provided to the Council, in accordance with the following timing:
- a) The first MEM-AMP - following the provision of the Baseline Report to the Council and prior to the first discharge of feed to the marine farm;
  - b) Each subsequent annual MEM-AMP- by 31 July each year;
  - c) The Annual Report - by 30 April each year.
50. Monitoring, analysis, marine farm management and other actions shall be undertaken in accordance with the Baseline Plan and the current provisions of the MEM-AMP for that year. The monitoring, and analysis shall be undertaken by a person or persons with appropriate knowledge and expertise.

## Peer Review

51. The **Baseline Plan**, the **Baseline Report**, each **MEM-AMP** and each **Annual Report** shall be provided to a Peer Review Panel, comprised of not less than three or more than five persons appointed by the Council and paid for by the consent holder, at least two of whom shall be scientists who, between them, have experience across the



following scientific areas - marine seabed and water column ecology, and evaluating enrichment-related effects - and who are recognised by their peers as having such experience, knowledge and skill, which shall report on the following matters:

- a) its review of the **Baseline Plan**, its assessment as to the adequacy of the water quality data and the monitoring proposed to achieve the requirements of Condition 43 and whether the actions and methods are in accordance with good practice, and any recommendations regarding changes to the monitoring proposed or any requirement for further modelling;
  - b) its review of the **Baseline Report**, its assessment as to whether it adequately responds to the results of the monitoring undertaken in terms of the **Baseline Plan** and achieves the requirements of Condition 44 and any recommendations regarding changes to the conclusions and recommendations contained in the **Baseline Report**;
  - c) its annual review of the **MEM-AMP**, its assessment as to the adequacy of the monitoring and marine farm management and other actions proposed to achieve the requirements of Condition 45 and whether the actions and methods are in accordance with good practice, any recommendations regarding changes to the monitoring proposed or any requirement for further modelling, and a review of and recommendations for any changes to, the hierarchy of responses to breaches of the WQS;
  - d) its annual review of the **Annual Report**, its assessment as to whether it adequately responds to the results of monitoring undertaken in terms of the previous **MEM-AMP** and achieves the requirements of Condition 46 and any recommendations regarding changes to the conclusions, recommendations and other matters specified in the **Annual Report**. This shall specifically include a review of, and any recommendations for changes to, amended WQS suggested in the **Annual Report**;
  - e) prior to any increase in the annual tonnage of feed discharged from the marine farm, confirmation that the requirements of Conditions 23, 27 and 30 have been complied with, and any associated recommendations regarding changes to the monitoring proposed or any requirement for further modelling;
  - f) confirmation that the requirements of Conditions 36 – 40 have been complied with;
  - g) any other matters it considers appropriate in fulfilling its purposes;
  - h) any recommendations as to whether it considers any particular condition(s) should be subject to review in accordance with sections 127 and 128 of the Act.
52. Copies of all reports from the Peer Review Panel shall be provided to the consent holder and the Council. These shall be public documents and shall be published on the consent holder's website within four weeks of its receipt from the Peer Review Panel by the consent holder.

## Management plans

53. A Marine Mammal and Shark Management Plan shall be prepared, in consultation with the Department of Conservation, and implemented and complied with. This plan shall be provided to the Council prior to the initial placement of the first structure(s) at the marine farm. The objectives of the Marine Mammal and Shark Management Plan shall be to:
- (a) minimise the adverse effects on marine mammals and protected sharks from the operation of the marine farm;
  - (b) minimise the interaction of sharks with the marine farms;
  - (c) determine how the operation of the marine farm will be managed adaptively to avoid, remedy and mitigate adverse effects on marine mammals and protected sharks;
  - (d) ensure that the best practicable option is adopted to avoid entanglement or entrapment of marine mammals and sharks, having regard to best international practice, ongoing research and allowing for technological improvements in net design and construction;
  - (e) establish a monitoring programme to assess the effectiveness of the Marine Mammal and Shark Management Plan; and
  - (f) establish reporting and response procedures in the event of marine mammal and protected shark entrapment, entanglement, injury or death.
54. The **Marine Mammal and Shark Management Plan** shall include, but not be limited to, the following details:
- (a) minimising the potential for sharks and marine mammals to enter the marine farm net pens through the use of predator-resistant materials in net pen construction and predator exclusion nets enclosing the marine farm net pen structures and extending sufficiently high above the water around the marine farm to exclude such predators, but no higher;
  - (b) limiting the maximum mesh size of any predator netting to 200mm (the internal measurement when the net is stretched in the direction of the long diagonal of the meshes);
  - (c) ensuring predator nets are sufficiently tensioned and maintained at that tension at all times so as to avoid entanglement of marine mammals or large sharks;
  - (d) ensuring the twine diameter of the predator net is of a sufficient gauge to:
    - i. be detected acoustically by dolphins; and
    - ii. avoid the entanglement of marine mammals or large sharks;
  - (e) predator net maintenance requirements, including:
    - i. standards and scheduling;
    - ii. repairing holes and tears immediately;

- iii. avoiding predator nets being left open over night or for extended periods of time;
  - iv. avoiding forming entrapment pockets in predator nets;
- (f) procedures for auditing marine farm security following any marine mammal gaining access beyond a predator net, and taking all practical steps to correct any faults found;
- (g) procedures to ensure visual surface marine mammal surveys are conducted prior to major net maintenance work and that nets are not opened, removed or shifted if dolphins are observed within 2km of the marine farm;
- (h) procedures for capture and release of any entrapped or entangled marine mammal and protected shark species;
- (i) procedures for the retrieval, storage and transport of dead marine mammals and protected shark species for formal identification and autopsy purposes;
- (j) staff training requirements, including identification of protected shark species;
- (k) ensuring there is no feeding of marine mammals and sharks;
- (l) ensuring dead fish are removed promptly from the fish pens;
- (m) ensuring anchor warps are maintained under sufficient tension to prevent possible entanglement of cetaceans and large sharks;
- (n) ensuring all lines associated with the marine farm are secured at all times, and that any loose lines are secured and/or retrieved promptly;
- (o) ensuring that all nets are removed from marine farm structures that are left fallow, untended or are abandoned;
- (p) ensuring all net and cordage debris, plastic strapping and other marine farm, domestic or other non-biodegradable waste is collected, retained and disposed of at an approved solid waste facility onshore, and that if any loose debris does enter the water around the marine farm, it is retrieved from the seabed, water column or foreshore promptly;
- (q) reporting requirements to the Marlborough District Council and the Department of Conservation, and in particular:
  - i. a minimum of annual summary reports of all incidents involving marine mammals and protected sharks becoming entangled or entrapped at a marine farm;
  - ii. immediate reporting (within 24 hours) of any incident where a marine mammal or protected shark may be injured or killed;
  - iii. reporting (within one week) of actions undertaken to remedy any unforeseen events such as a marine mammal or protected shark becoming entrapped or entangled at a marine farm.

The Marine Mammal and Shark Management Plan shall be reviewed, to ensure best practice, by an appropriately qualified person at 5-yearly intervals and provided to the Council.

55. A Biosecurity Management Plan shall be prepared, in consultation with the Ministry for Primary Industries, and implemented and complied with, with the objectives of minimising the risk of spreading marine pests and disease agents as a result of the establishment and operation of the marine farm.
56. The **Biosecurity Management Plan** shall include on-farm, as well as vector-based, management measures to reduce the risk of spread, including:
  - (a) Methods to manage vectors that could spread marine pests and disease agents to or from marine farms;
  - (b) Routine practices to manage fouling of nets and structures;
  - (c) A passive surveillance regime to facilitate early detection of unusual or suspicious organisms associated with marine farm structures;
  - (d) An effective disease surveillance regime for salmon stock;
  - (e) The use of husbandry and harvesting methods consistent with best practice for the minimisation of disease risk;
  - (f) On-farm management measures to prevent, control or contain biosecurity risks to the extent practicable.

The Biosecurity Management Plan shall also specify the parties to be notified should any new biosecurity risk from marine pests or disease agents be identified at the marine farm. These parties shall include landowners and tourism/recreation businesses within 1 km of the marine farm.

57. The **Biosecurity Management Plan** shall be reviewed, to ensure best practice, by a person or persons appropriately qualified in marine biosecurity and aquatic animal diseases, and provided to the Council prior to the initial placement of the first structure(s) at the marine farm. The Plan shall be reviewed at least annually by the consent holder and an independent auditor appropriately qualified in marine biosecurity and aquatic animal diseases, to ensure that the management practices specified in the Plan are consistent with Condition 55 and 56. Any revisions to the Plan shall be provided to the Council within one month following completion of the revisions.
58. The following management plans shall be developed, provided to the Council prior to the initial placement of the first structure(s) at the marine farm, and then implemented and complied with:
  - (a) A **Residential Amenity Management Plan** to minimise the risk of neighbours experiencing significant reductions in residential amenity due to off-site visual, noise and odour and other effects from the marine farm. This shall include a requirement that there be no firearms at the marine farm at any time, nor on any vessel associated with the marine farm and operated by the consent holder. This shall include the identification of a specific liaison person

to be the point of contact with neighbours and any local residents association for the purposes of disseminating information relating to the operation of the marine farm and to respond to any issues or concerns raised.

- (b) A **Wildlife Nuisance Management Plan** to minimise the risk of neighbours experiencing significant reductions in amenity values due to wildlife nuisances attributable to the marine farm.
- (c) A **Solid Waste Management Plan** to minimise the risk of reductions in neighbouring amenity values caused by the accumulation of solid waste debris along the shoreline resulting from the marine farm.

These Plans may be combined together or form part of a wider management plan, provided the matters referred to are addressed in any such document.

59. Notwithstanding conditions 53 to 58 above, existing management plans for marine farms in CMZ3 may be updated and submitted to Council for marine farms in CMZ4.



## Appendix D5

### Prohibited activity status in terms of Rule 35.6 Coastal Marine Zone 2

Location	Schedule of site co-ordinates					MDC consent reference
	NZTM Map Grid			Latitude	Longitude	
	Point	East	North			
Otanerau [MDC site 8396]  (Fig D5.1)	1	2620688	6003735	41°10.111'S	174°19.156'E	U040217
	2	2620896	6003649			U080726
	3	2620712	6003206			U160039
	4	2620504	6003292			MPE763 MFL446
Waihinau [MDC site 8085]  (Fig D5.2)	A	2590085	6028317	40°56.920'S	173°57.187'E	U080726
	B	2590253	6028422			MFL456
	C	2590463	6028084			
	D	2590294	6027977			
Forsyth Bay [MDC site 8110]  (Fig D5.3)	1	2595593.1	6024616.0	40°58.946'S	174°01.062'E	U040412
	2	2595742.3	6024601.5			U080726
	3	2595703.8	6024205.4			MFL239
	4	2595554.5	6024217.9			
Crail Bay MFL048 [MDC site 8513]  (Fig D5.4)	1	2591347.50	6011921.32			U090660
	2	2591447.65	6012204.12			U060533
	3	2591589.05	6012154.04			U130781
	4	2591468.27	6012037.68			MFL48
	Centroid	2591468.27	6012037.68			
	TrigN	2591794.33	6013229.78			



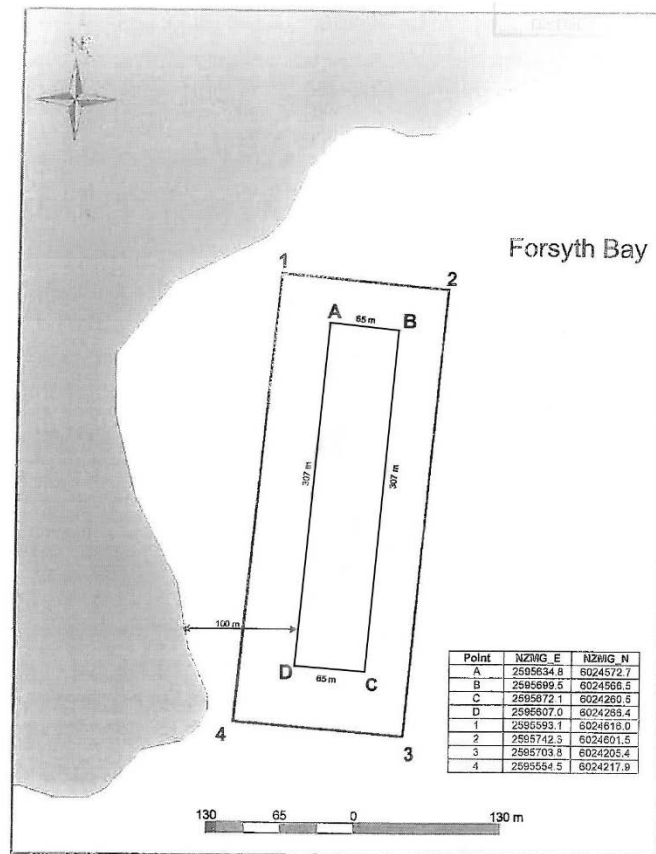


Figure D5-3: Forsyth Bay site diagram

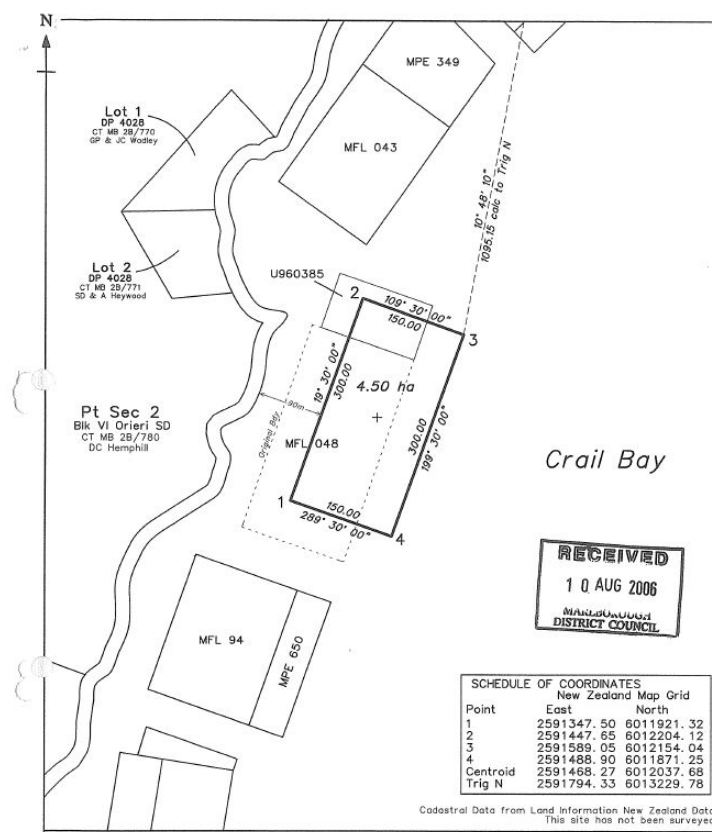


Figure D5.4: Crail Bay MFL048 Site diagram

## Appendix D6

### Prohibited activity status in terms of Rule 35.6 Coastal Marine Zone 2

Location	Schedule of site co-ordinates				MDC consent reference
	NZTM Map Grid			Latitude	Longitude
	Point	East	North		
Crail Bay MFL032 [MDC site 8515]  (Fig D6.1)	2	2591107.99	6011234.53		
	3	2591170.65	6011559.30		
	5	2591361.82	6011528.74		
	6	2591299.16	6011203.98		
	Centroid A	2591230.95	6011361.13		

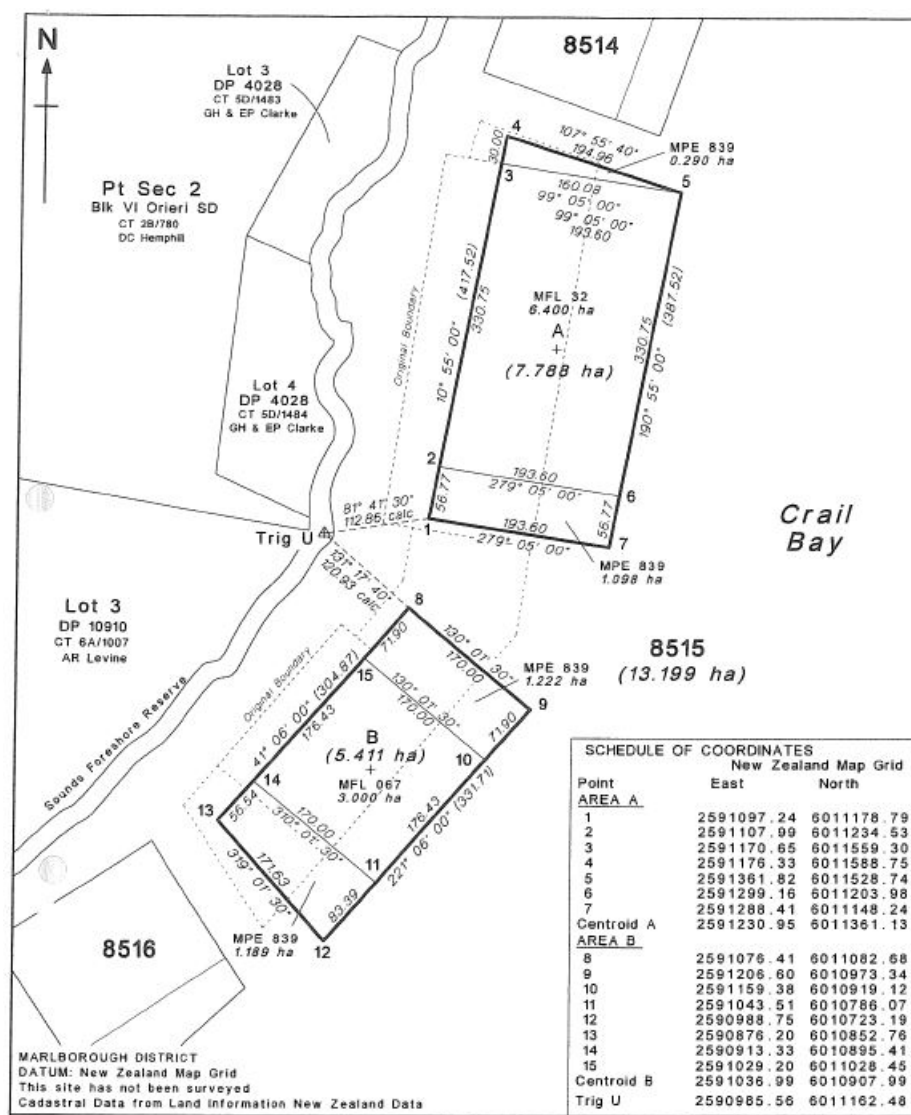


Figure D6.1: Crail Bay MFL032 Site diagram

## Appendix 2: GPS coordinates of potential relocation site farm boundaries

Potential Relocation Site	Latitude °S	Longitude °E
Blowhole Point North	40° 56 03.119'S	174° 01 02.911'E
	40° 55 47.564'S	174° 01 09.004'E
	40° 55 45.724'S	174° 01 00.763'E
	40° 56 01.246'S	174° 00 54.717'E
Blowhole Point South	40° 56 34.378'S	174° 00 30.121'E
	40° 56 24.253'S	174° 00 38.176'E
	40° 56 19.210'S	174° 00 32.798'E
	40° 56 29.406'S	174° 00 16.188'E
Waitata Mid-channel	40° 47 24.979'S	173° 58 18.393'E
	40° 47 10.569'S	173° 58 46.771'E
	40° 47 05.194'S	173° 58 42.042'E
	40° 58 08.118'S	173° 58 23.150'E
Richmond Bay South	41° 01 00.704'S	173° 56 26.106'E
	41° 00 50.014'S	173° 56 36.484'E
	41° 00 43.560'S	173° 56 24.921'E
	41° 00 54.279'S	173° 56 14.539'E
Horseshoe Bay	41° 01 33.885'S	173° 56 13.431'E
	41° 01 18.538'S	173° 56 14.455'E
	41° 01 18.162'S	173° 56 04.774'E
	41° 01 33.542'S	173° 56 03.750'E
Tio Point	41° 14 39.080'S	174° 14 55.085'E
	41° 14 35.924'S	174° 14 57.637'E
	41° 14 42.120'S	174° 15 11.101'E
	41° 14 45.277'S	174° 15 08.549'E

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