

Report pursuant to Section 42A of the Resource Management Act 1991



ISO 9002
Form Ref CI 521

FILE NO: U040412

APPLICANT: The New Zealand King Salmon Company Ltd

SITE OF APPLICATION: Forsyth Bay, Outer Pelorus

PROPOSAL: To extend the existing salmon farming structures (currently occupying 1.2 hectares) to a total area of 2 hectares within existing permit area (6.0 hectares).
To discharge up to 4000 metric tonnes of salmon feed per annum.

CONSENTS APPLIED FOR: Coastal Permit – Structures & Activity (20 year duration)
Discharge Permit – to Water

GRID REFERENCE: E 2595658 N 6024425

Background

1. The subject licence is Li239 situated on the west coast of Forsyth Bay.
2. Marine farming licence 239 was established as a salmon farm in 1986. The total occupation area is 6.0 hectares.
3. The licence was issued prior to the Resource Management Act; all operational conditions were dictated by the fisheries legislation under which the licences were issued.
4. It should be noted that in particular such conditions did not specifically address discharge, merely specifying types of feed to be used.
5. Since 1989 there have been two further coastal permits issued specifying structure types and anchorage areas.
6. Coastal Permit U940328 authorised the placement of 3 large cages, 2 utility cages, a service barge, and the discharge of greywater (not sewerage) within the licence area.
7. Coastal Permit U980454 authorised an additional 3 “mega” cages and a barge on the site.
Note: Both of these permits expired on 31 August 2004. The applicant lodged his application on 27 February 2004. Process of the application was deferred pending a decision by the Court as to whether the Moratorium applied to an increase in structures. The Court has now confirmed that it does not and accordingly the applicant is entitled to continue in operation pending a decision on this application pursuant to Section 124(a) of the Resource Management Act 1991.
8. Thus at this point in time the total area of occupation is 6.0 hectares. The majority of this can only be utilised for anchorage purposes, with only a total of 1.2 hectares to be occupied by the above structures.
9. The site is currently unoccupied, being “fallowed” by The New Zealand King Salmon Company Ltd in 2001.

10. Initially the applicant applied to include provision for underwater lighting. This component has however been withdrawn.

Description of Application

11. The applicant has applied to increase the area occupied by structures to a total of 2 hectares. The configuration of cages and ancillary barges and their location within the permit area to be at the discretion of the consent holder.
12. The extension of the marine farm activity will necessitate an increase in the amount of salmon feed currently discharged to the environment to 4000 metric tonnes.
13. The applicant has also therefore applied for a discharge consent to enable the discharge of a maximum of 4000 metric tonnes of extruded salmon feed per annum.
14. The applicant wishes to retain discretion as to the number, size and configuration of structures providing all structures are contained within the boundaries of the permit area.
15. The term sought is 20 years.

Farm Operation

16. New Zealand King Salmon operate four active marine farms and hold occupancy rights over five sites throughout the Marlborough Sounds.
17. These are Ruakaka Bay, Otanarau Bay (Arapawa Island), Te Pangu (Tory Channel) and Waihinau Bay in the Outer Pelorus.
18. The site in Forsyth Bay is currently fallow, the structures having been moved to Waihinau Bay.
19. The salmon stock is introduced to the farm by the introduction of fingerlings from one of New Zealand King Salmon's landbased hatcheries.
20. From thereon the salmon are progressively grown out to a marketable size, which takes approximately 18 months to two years.

Feeding

21. Feed is delivered to the fish via a computerised hopper system. The feed itself is an extruded pellet sources from Australia or South America, the main ingredients being fish oil, fish meal and some vegetable protein.
22. Above the cage is a feed hopper holding up to 750kg of feed. The feed is spread upon the surface using a spinner.
23. As the feed is the major cost in the salmon farm operation, the applicant has set in place a number of monitoring regimes, i.e. electric eyes and underwater cameras, to ensure that all food introduced is consumed by the fish.
24. These control mechanisms, which are set in the lower part of the cages, automatically cut the food supply once uningested pellets fall below the feeding layer.
25. The applicant estimates that feed wastage is 0.07% to 1.5%, however for this exercise the discharge parameters will be assessed using a 3% estimate of feed loss.

Site Description

26. The salmon farm is located on the west coast of Forsyth Bay, approximately 1.6 kilometres northwest of Bird Island

27. The western entry of Forsyth Bay is identified as an area of outstanding landscape by the Plan, the farm would lie south of this area.
28. The adjacent coastline rises steeply from a rock and cobble intertidal zone, through steep slopes, which are currently covered by regenerating coastal shrubbery to a ridgeline approximately 200 metres above sea level.
29. To the northeast (100 metres) of the salmon farm is marine farm licence U941503 owned by Marlborough Mussel Co Ltd, while to the southwest (approximately 350 metres) is another mussel farm, L1153, also belonging to Marlborough Mussel Co Ltd.
30. The nearest residence would be the house in a small embayment some 400 metres south of the site. The salmon farm is not visible from this site.
31. These structures would also be visible to the house on Forsyth Island to the east, however this would be at a distance of over 3 kilometres away.
32. The land adjoining is zoned as Rural 1 while the foreshore reserve (20 metres inland from mean high water) is identified as Conservation.

Statutory Framework

33. The Marlborough Sounds Resource Management Plan and the Coastal Plan became operative on 28 March 2003.
34. Located in Coastal Marine Zone Two, the existing farm and its occupation is given the controlled activity status under rule 35.2.5 (page 35/11). This states that:

Marine farms authorised by current coastal permit or current marine farm lease or licence pursuant to the Marine Farming Act 1991 applied for prior to 1 August 1996;

or authorised by a new coastal permit, the application for which constituted a renewal of a coastal permit, marine farm lease or licence specified above which was current at the date of the application being made for new consent are controlled activities provided that:

 - *All structures and anchoring systems are those authorised by the current coastal permit, marine farm lease or marine farm licence.*
 - *The marine farm shall only occupy the area and only be utilised for the purposes and species authorised by the current coastal permit or marine farm licence.*
 - *The species to be farmed on the marine farm shall be only those authorised by the current coastal permit or marine licence and that the lighting systems utilised on the marine farm shall at all times comply with the conditions of the current coastal permit.*
35. This proposal however, constitutes a change in structures and associated anchoring systems which falls outside the controlled activity standards.
36. Rule 35.3.1 provides for alteration or amendment of structures as a restricted (limited) discretionary activity. However under standard 1 this specifies the number and length of **longlines** and associated anchoring systems. This rule does not appear to encompass the additional cages and structures contemplated within this consent.
37. Moving on to discretionary activity rule 35.4, being an activity listed as a permitted or controlled activity which does not comply with the standards specified for those activities. This rule requires compliance with rule 35.4.2.9 (i.e. farms between 50 metres and 200 metres from mean low water). The licence area is located within 200 metres of mean low water [Fig 35.1 (Page 35-21)] and in terms of this application can be dealt with as a **Discretionary Activity**.

38. With regard to discharge, rule 35.4.2.10 deals with discharges to water, and in particular Rule 35.4.2.10.1.5 specifically identifies effects on marine ecosystem of the artificial feed from marine farms.
39. In terms of this rule the discharge component will also be assessed as a **Discretionary Activity**.
40. In all therefore, this application will be assessed as a **Discretionary Activity**.

Section 93/94 - Resource Management Act 1991

Public Notification

41. Pursuant to Section 93 this application has been notified on 9 September 2004, with submissions closing on 7 October 2004.
42. At the close of notification the following submission had been received:
Director General of Conservation opposes the application stating that an adaptive management regime should be adopted if there is to be any increase in discharge. It is noted the existing level of seabed effect requires to be accurately defined and suggested environmental quality standards need to be clearly detailed and defined and that any such standards should include absolute bottom lines for environmental and seabed quality.

Other Correspondence

43. It is noted that no response has been received from the Maritime Safety Authority or Ministry of Fisheries in relation to this application.

Evaluation

44. Section 104 sets out those matters which consent authority will have regard to when considering an application for resource consent while these matters are subject to Part II of the Act.
45. The Marlborough Sounds Resource Management Plan sets out certain assessment criteria for marine farms (Volume 2 Rules 3.1.1 and 3.2.9 CMZ Zone).
46. The following is an assessment of the actual potential and potential effects of the proposed farm on the environment against this criteria:

Visual and Landscape Effects – Including Effects on Natural Character

Relevant plan assessment criteria are:

- *The consideration of aesthetic and cultural matters including proximity to residences, land zoned for residential use and land subdivided for residential use;*
 - *The visual effect of the farm and its operation;*
 - *Proximity to and likely effect on likely areas of scenic value and recreational value;*
 - *Whether the proposal will enhance or maintain the amenity values of the surrounding area*
47. The natural character, landscape and amenity values of the area have been discussed under ‘Site Description’. As noted, the western entry to Forsyth Bay is identified as an area of outstanding landscape. However, it must be accepted that landscape areas are a broad identification only and it is necessary to assess each site within the context of the application and the character of the particular area affected.

48. While the contours of the land are typical of the Outer Pelorus Sound, the land cover has in the past been modified by a history of pastoral activity and is now regenerating to coastal shrubbery.
49. The area does display a degree of natural character that will increase over time as the land cover regenerates.
50. The applicant has assessed the impacts of the structures from various residences and viewpoints noting that the nearest house is some 400 metres to the south. This would be shielded from view by an intervening headland. There is also a permanently occupied house on Forsyth Island. Although this is in direct view, it is some 3 kilometres away.
51. The applicant submits that unless viewed from a very close range, the farm is not visually imposing on the landscape and when viewed from sea level the structures become barely visible at distances over 1000 metres, becoming progressively more visible as one nears the farm.
52. When viewed from these distances against the backdrop of the adjoining coast, the structures tend to blend into the landscape.
53. Most visually prominent are the buildings on the service barges, whereas the salmon cages and associated netting tend to be viewed as a line on the water surface.
54. The extension of structures in this case is restricted to the sea cages (not 2-storey barges). The visual effects would be one an extension of the surface structure line, rather than the introduction of a new visual element.
55. However if the structures are to be moved around the site then the visual character of the site will change according to the location of structures at any given time.
56. However from all principal viewpoints, i.e. from residences or those on the water, the structures would still be viewed against the backdrop of the adjoining coastline.

Summary of Landscape and Scenic Values

57. While it is accepted that there will be some increase and intensification of the existing effects of the salmon farm on the landscape, the extension of these structures would be an intensification of effects, viewed against the backdrop of the adjoining coastline, rather than the introduction of any new elements.
58. On this basis it is concluded that any actual or potential visual effects arising from the extension of structures over and above those already in place would be no more than minor.

Ecological Effects Including Effects on Water Quality and Sustainability of the Marine Resource

Relevant Plan Assessment Criteria

- *The present nature of the site both physical and biological including the nature of the seafloor and species found in the area.*
- *The effect of marine ecology feed proposed to be added to the environment including the type and amount of feed and an assessment of its effect on the environment.*
- *Proximity to and likely effect on the areas of ecological value.*
- *Likely effects on water quality and ecology.*
- *That the proposal does not adversely affect any habitat of any indigenous species or compromise the integrity of any marine ecosystem*

59. A large part of Forsyth Bay is recognised as an area of ecological value as it contains a number of King Shag feeding areas. This site is not within any identified areas. There is still considerable debate as to whether marine farms adversely affect King shag behaviour.
60. In this instance the principle effects arising are from the deposition of uneaten feed and salmon faeces onto the seabed below, with the release of nitrogen compounds, in particular ammonia, into the water column.
61. Cawthron Institute have been monitoring the benthic sediments below the salmon farms in the Marlborough Sounds for a number of years. The continued enrichment of the seabed below the farms are causing the sediments to become anoxic (oxygen deficient), although the sediments contain a high number of polychaete worms which feed on this sediment, the overall biodiversity of other animals and communities is very low.
62. In the Forsyth situation the effects footprint extends 50 to 100 metres from the cages in a northeasterly direction.
63. The AEE submitted with the application (Cawthron Report No 846 February 2004/Executive Summary - Appendix B) outlines the existing effects on the seabed from deposition of faeces and uneaten feed. This follows a series of surveys carried out annually from 1998.
64. The report concludes that although there has been an improvement in the state of seabed since the site was fallowed in 2001, the seabed is still moderately enriched with a reduced species richness (compared to unimpacted sites) dominated by polychaete worms.
65. The application then discusses the practicalities of remediation of this existing situation.

Remediation

Site Fallowing

66. As stated above, this site was voluntarily fallowed by The New Zealand King Salmon Company Ltd in 2001. This was considered to be the most appropriate way to allow the seabed to recover and would also provide an opportunity to assess the rate of recovery. The seabed was surveyed immediately following the removal of the structures and has been resurveyed annually since this time.
67. A summary of these surveys is set out below:

2000 Forrest (2001)	The sediments beneath the cages were highly enriched. The sediments had a <i>Beggiatoa sp.</i> mat coverage of ~75%, an organic content of ~14%, a very strong hydrogen sulphide odour, out-gassing from the sediments. Salmon feed was observed beneath the cages. Impacts 50 m from the cages were low and impacts were slightly less than in previous years.
2001 Hopkins (2002)	At time of sampling the Forsyth Bay salmon farm had been partially relocated to Waihinau Bay. The seabed beneath the cages showed signs of high nutrient enrichment, as evidenced by a <i>Beggiatoa sp.</i> mat coverage of between 10-75%. No salmon feed present on the seabed at the time of sampling. The macrofaunal assemblages found within less modified sediments (<i>i.e.</i> 50 m, 75 m, 100 m and control sites) were characterised by a high diversity of co-dominant species; whereas enriched or impacted sediments (<i>i.e.</i> 25 m cage sites) contained elevated densities of few opportunistic species (<i>e.g.</i> Capitellid polychaetes).

<p>2002 Hopkins (2003)</p>	<p>Some improvement of the seabed is apparent since the fallowing of the site 12 months prior. However, organic content at the cage sites had not declined and was still relatively high (mean = 17%). The RPD depth remained at the sediment/water interface. However, it appeared that the RPD depth had increased at the 25 m site and possibly the 50 m and 75 m sites. Species richness and abundance had noticeably improved at the cage 1, 25 m, 50 m and 75 m sites, providing evidence the recovery process at these sites had begun.</p>
<p>2003 Hopkins <i>et al.</i> <i>This study</i></p>	<p>Seabed impacts beneath and immediately adjacent to the salmon farm were moderate and lessened with increasing distance from the farm, with impacts extending to approximately 50 to 100 m from the cages in a north-easterly direction. Seabed impacts inshore and to the south of the salmon farm were relatively low at 50 m from the cages, confirming observations that dispersion by currents from the farm is primarily in a northeasterly direction. Based on ROV footage and diver observations, impacts to the inshore habitat were limited to between 15-50 m from the cages.</p>

- 68. In summary, investigations to date indicate that once the salmon farm is removed opportunist feeders such as polychaete worms will continue to process the anoxic layer created to a near normal state over a period of years.
- 69. However the Waihinu Bay experience indicates that once farming recommences it returns to an azoic state.
- 70. Thus on the basis of the work done to date, it would appear that with current practices there is no balance between the two states.
- 71. The report concludes therefore fallowing, and in particular short term fallowing, is of little benefit.

Capture and Collection of Waste

- 72. The collection of wastes by placement of tarpaulins on the seabed below the farm is considered to be unsuccessful as the negative buoyancy of the faeces and uneaten food means that the waste will easily float off the panels and be dispersed by water currents.
- 73. Closed cage systems have been trialed elsewhere in the world. Closed cages or bags use pumps to circulate the outside system into the cage. However because of the volumes of water and the speed of exchange much of the waste is still discharged with the outgoing water.
- 74. Because the culture environment is dependent on pumped water, any pump failure would place the stock at immediate risk.

Enhancing Natural Degradation

- 75. Various options have been trialed for enhancing the natural processing of the effluent on the seabed. This includes dredging of the seabed under the cages. The applicant believes this would be physically impractical without removing all cages and moorings.
- 76. The process of collecting the waste from the seabed would also stir up a significant proportion of the sediment and re-suspend particles and enable them to spread elsewhere, therefore a full collection of the waste would not occur.

77. It is noted that internationally dredging of farm sites is not permitted due to risks of potentially harmful waste being spread across a wider and uncontrolled area. It is generally considered it is not realistic to remove waste by dredging without:
- (a) Grossly damaging the seafloor and removing or killing the biota that process farm wastes.
 - (b) Spreading the waste over a much larger area as 100% collection would be very difficult to achieve.
 - (c) A large amount slurry-like waste would be collected that would still require to be disposed of.

Feed Control and Conversion

78. The report concludes that the most effective way of minimising effect is efficient feed mechanisms that ensure that any uneaten food is minimised and management practices that ensure maximum feed conversion by stock.
79. More efficient feeding mechanisms and farm management practices will achieve greater outputs and at the same time will lead to more environmentally sustainable practices.
80. The report states an estimate of feed wastage in the New Zealand King Salmon farms varies from between 0.07% from the constantly monitored pens, and 1.5% for the roaming monitored pens.
81. Published data however works on an estimated feed loss of 3% and this higher percentage has been used in the applicant's calculations.

Analysis of Effects

82. The applicant therefore accepts that the operation of this and other salmon farms does create an adverse effect on the seabed, and further quantifies this effect as follows:
- Causes seaward bed effects and deposition of organic wastes from sea cages from
- (a) Fish excreta or faeces
 - (b) Uneaten food and waste feed
83. It is estimated on the basis of 4000 metric tonnes of feed, 20% of ingested feed is excreted into the water column and on to the sea floor. This is equivalent to 776 tonnes of faeces in the environment over one year.
84. Added to this would be 120 tonnes of waste feed (4000 tonnes x 3%). Waste feed and faeces also give rise to organic carbon. Organic carbon loading on the benthos has an important role in determining the risk of altering the macro fauna species composition based on the volumes of feed and faeces released to the environment. The report estimates a total of 349.2 tonnes of carbon will be lost to the environment each year (54 tonnes waste feed, 349 tonnes faeces). Dispersion rates for the settling of organic waste on the sea floor is estimated to be a 22 metre margin for feed pellets and 110.7 metre for faeces.
85. Based on these figures the total area of deposition will be 3.4 hectares of waste feed and 14.6 hectares for faeces. This equates to a total loading of 0.35g per square cm of waste feed per year, 0.53g per cm for faeces. The carbon equivalent is 0.24g per cm per year.
86. Extrapolating all these figures this is confirmed by an extent by dive surveys indicate the level of impact ranging from the highest impact beneath the farms decreasing to a near natural environment at 75 metres distance.

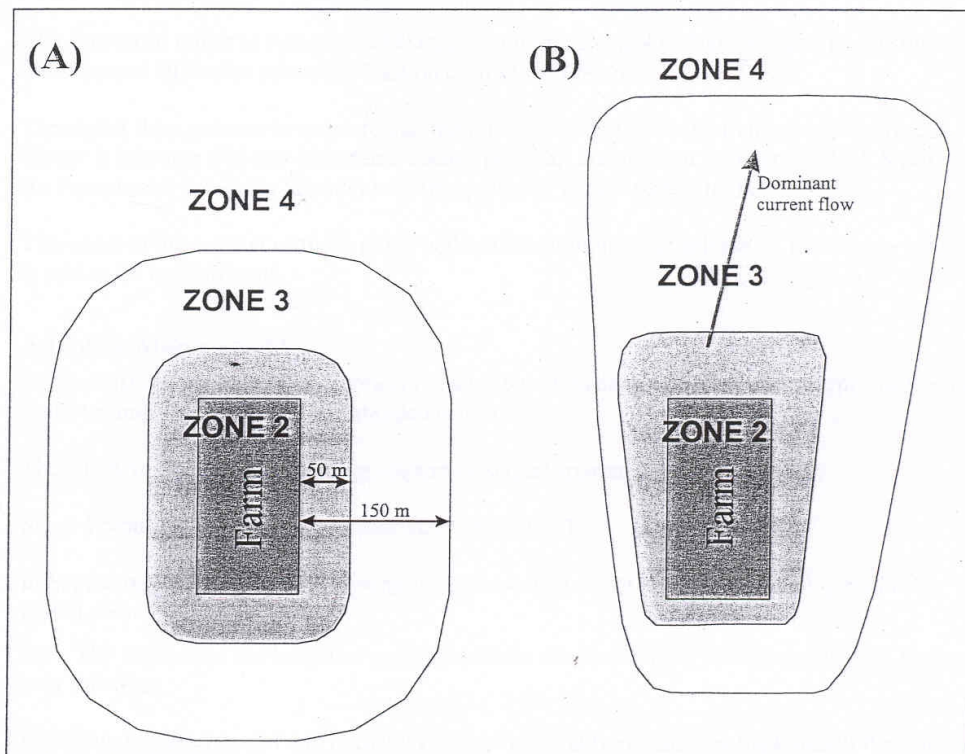
87. Based upon this, the applicant has concluded that changes can be measured using a range of determinants, including changes in sediment composition, changes in dissolved oxygen and changes in benthic biota. The approach is to define zones for the settlement footprint and then allow for the deflection by the water currents.

88. The zones suggested would be distorted rings (to account for tidal currents around the cages which in this case appears to be a net flow to the northeast).

zones 1/2 - immediately below the cages and extending out to 50 metres from the edge of the cages

zone 3 - extending from 50 metres to 150 metres from the cages

zone 4 - beyond 150 metres



89. The applicant then suggests that the following minimum environmental standards are applied to each zone:

all zones – azoic – no animal life – not permitted

zones 1/2 – the sediment can be impacted to a degree that it supports a seabed community defined as low species diversity dominated by opportunist polychaete worms

zone 3 – seabed community must be characterised as transitional between zone 2 and zone 4

zone 4 – community in the sediment should be similar to species and community composition to external control sites.

Movement of Cages

90. The writer would comment that the above approach would be logical if the cages are to remain in one place. It would however appear impossible to impose consistent monitoring strategies and establish baselines if the cages are to be moved.

Marine Mammals & Fish

91. Other perceived environmental effects would be those on marine mammals and fish.
92. The applicant contends that there is little effect on marine mammals, quite the converse so far as seals are concerned as the site is a major attractant to colonies of fur seals.
93. Management protocols have been established in conjunction with the Department of Conservation to avoid, remedy or mitigate the potential effects on seals (rather the effects of seals on the salmon farm) in terms of predator netting and capture protocols.
94. In terms of fish, the applicant contends that the net structures and the presence of feed in the water tends to act as an attractant to fish, while the nets form an artificial reef in which many forms of fish seek shelter.

Sea Birds

95. As a potential food source, the salmon farm tends to be an attractant to sea birds.

Water Column

96. Potential effects on the water column would be the release of ammonia and salts of nitrate and phosphate from excreta and decaying food.
97. Excess nutrients can lead to eutrophication which is the enrichment of waters by nutrients, particularly in compounds of nitrogen and phosphorus, which cause an accelerated growth of algae and higher forms of plant life.
98. Based on the figures provided previously, the applicant estimates a total of 135.8 tonnes of soluble nitrogen will be released per year (dissolved in organic nitrogen DIN).
99. The Cawthron report is based on 4000 tonnes and this equates to 2002 report which estimated 88 tonnes of DIN to be released based on current feed inputs.
100. The report then goes on to estimate that the total DIN input from the Pelorus and Kaituna Rivers is between 500 and 600 metric tonnes per year, and the nett input from Cook Strait (to Pelorus and Kenepuru Sounds) is in the region of 12,000 metric tonnes per year.
101. Therefore in the context of these much higher natural inputs, the release of 138 tonnes per year is said to be insignificant.

Adaptive Management

102. On the basis of the above, the applicant has proposed an adaptive management approach which seeks to limit the effects of the extended activity.
103. The adaptive management concept requires a staged approach to the discharge:
104. Stage 1 would allow a maximum discharge of 3000MT.
105. In September to November, following the commencement of stage 1, monitoring will be undertaken.
NB: The September to November period has been chosen because stock reaches peak biomass over this time.
106. Providing monitoring and any necessary review of conditions satisfies the Council that the increase in discharge is giving rise to no more than minor adverse effect, then stage 2 may be initiated, which authorises a maximum discharge of 3500MT.

107. Again this will be monitored as in stage 1 and, providing any adverse effects continue to be minor, then stage 3 may commence at the maximum discharge of 4000MT.

Summary

108. **The applicant's premise therefore is that there is a detrimental effect in terms of deposition of faeces and uneaten food on the seabed below the salmon farm. However this effect is limited to an envelope within 50 metres of the salmon farm cages, with a diminishing effect out to 150 metres of the cages, and no effect thereafter.**
109. **The applicant submits that given the current technology and practices, it is impractical to attempt to avoid, remedy or mitigate these effects, rather to ensure that they are confined within a given area and within certain parameters through an adaptive management regime.**
110. **The writer questions whether an adaptive management regime based on benthic survey and monitoring is practical where cages are to be moved.**
111. **As will be stated later in this report it is for the Committee to determine whether a known and quantifiable effect can be weighed against the obvious social and economic benefit of the existing and extended activity and whether this would meet the purpose of Section 5 of the Act.**

Navigational Effects

Relevant Plan Assessment Criteria

Consideration of navigational matters, including adequate clearance from the shoreline and adjacent marine farms

- Navigational routes and access
 - Jetties, log landings, loading sites and other points of access to the foreshore and headlands
 - Anchorage and mooring areas
 - Water ski lanes and subaqueous cables
112. The Maritime Safety Authority has indicated no concerns in this matter.
113. Likewise the Harbourmaster has stated that, subject to adequate lighting, an extension of the existing salmon farming activity in this area would not constitute a navigational hazard. However, he considers that the movement of structures would create a potential hazard to those who navigate regularly in the area as structures would be located in an unexpected position. In addition, the integrity of anchoring structures would be at additional risk.
114. Although the existing farm is in proximity to the principle navigation lines of Forsyth Bay West, it does not encroach into those lanes.
115. There are no residences within the immediate area, the area does not receive a high degree of use. That use it does receive would presumably be limited to occasional fishing boats accessing the coast and the head of the bay (Whakatahuri) and mussel farm servicing and harvesting.

Anchorage and mooring areas

116. There are no identified anchorages or mooring areas identified within the New Zealand Cruising Guide or the New Zealand Pilot. The Cruising Guide notes that Forsyth Bay provides little shelter and is not a comfortable anchorage.

Jetties, log landings, loading sites and other points of access to the foreshore or headlands

117. There are no jetties or log landings within the embayment concerned.

Water ski lanes and subaqueous cables

118. There are no water ski lanes or known subaqueous cables within the area.

Summary of Navigational Matters

119. It is concluded that the extension of marine farm structures within the area concerned would not impose a navigational hazard. Neither would it unduly restrict public access to the embayment in question. However, further evidence will need to be provided by the applicant to satisfy the Committee that the structures can be moved without creating a hazard.

Recreational and Commercial Fishing – Access to and Alienation of Public Space

120. The applicant has not identified any specific values or uses of the area.
121. No submitters have identified specific uses or values of this area.
122. No specific values have been attributed by submitters to the subject embayment. As stated above, the writer has assessed that the area would receive a low degree of recreational use.

Summary

123. **The application encompasses a relatively minor extension of marine farm structures within the context of the bay generally. It is not seen to have any adverse effects on the public access or alienation of public space.**

Other Matters

Socio Economic Benefits

124. New Zealand King Salmon submits that the company directly employs over 350 persons full time, of which over 70 are based in the Marlborough area.
125. The company produces approximately 5000mt of salmon, with sales of around \$60 million, of which 70% is on the export market.
126. In Ruakaka alone the stock values peaks at around \$5.6 million.
127. On this basis the company therefore considers that there is a significant social and economic benefit to the country, and to the Marlborough region in particular. The continuation of these operations, and the extension in question, will only provide further benefits to the community and nation.

Summary of Assessment of Actual or Potential Effects

128. Following is a summary of the preceding assessment of the actual or potential effects of the proposed extension to the salmon farm.

Visual Amenity

129. In the context of the embayment in question, the extension of further salmon farm cages to a maximum area of 2 hectares would not have a more than minor adverse effect on visual amenity and landscape values.

Ecological

130. The ecological effects from the salmon farm and its operation are currently impacting on the benthic environment arising from the deposition of salmon faeces and uneaten food.
131. The applicant has accepted these effects and has provided a quantitative analysis in terms of the degree and extent of effect on both the existing farm and the extended farm.

132. The applicant has submitted that it is not possible to avoid, remedy or mitigate these effects, that rather through an adaptive management regime will ensure that the effects are measured and confined within sustainable parameters.
133. The writer questions whether such a regime could be applied in a situation where structures and activity can be moved at the consent holders discretion.

Navigational Effects

134. It has been concluded that the farm does not constitute a navigational hazard, nor does it unduly restrict public access or alienate public space.
135. However, further evidence is required to satisfy the Committee that the structures can be moved without hazard.

Policy Analysis

Marlborough Sounds Resource Management Plan: Objectives and Policies

136. The objectives and policies of the Marlborough Sounds Resource Management Plan relating to the Coastal Marine Area are included in Chapter 9.0 Coastal Marine. This application is assessed against the three objectives, each of which has policies which are relevant to marine farming. These objectives and policies are listed in **Appendix A** to this report, which is applicable to all marine farm applications.
137. The existing salmon farm is identified as a controlled activity under the Marlborough Sounds Resource Management Plan, however the extension of structures encompassed within this application requires the matter to be assessed as a non-complying activity.
138. For the reasons discussed above, there are known and quantified adverse effects upon the benthic environment below and around the salmon farm.
139. Consideration must be given to the provisions of the Plan as they relate to this proposal. Those of particular relevance are Objective 9.2.1 ‘The accommodation of appropriate activities in the coastal marine area whilst avoiding, remedying or mitigating the adverse effects of those activities’.
140. Policy 9.2.1.1 which relates directly to the assessment criteria in the Plan, particularly *(a) conservation and ecological values, (b) cultural and iwi values, (d) landscape, seascape and aesthetic effects, (f) natural character of the coastal environment, (g) navigational safety, (i) public access to and along the coast, and (j) public health and safety.*
141. Of particular relevance is Policy 9.2.1.1.2 which restates Policy 3.2.2 of the New Zealand Coastal Policy Statement and applies throughout Chapter 9:
Adverse effects of subdivision use or development in the coastal environment should as far as practicable be avoided. Where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects to the extent practicable.
142. The Explanation to the Objective and Policies addressing Issue 9.2 clarifies the intent of the above, states that the extent of occupation and development of the coastal marine area by structures and other activities (including marine farming) needs to be controlled in order to address their effects and to enable all users to obtain benefit from the coast and its waters.
143. Having regard to Objective 9.2.1 and its concomitant Policies 9.2.1.1 and 9.2.1.1.2 it is necessary to consider how the continued and adverse impact upon a defined area of seabed aligns to these policies and in particular the requirements of Policy 9.2.1.1.2.
144. It is necessary to consider whether the adaptive management regime proposed will satisfy the requirements of Policy 9.2.1.1.2.

145. Assessing this application, it is also necessary to consider the objectives and policies of plans under 9.4 (page 9-14) which deals with alterations to the foreshore and seabed. In particular Objective 9.4.1.1 which requires:
- “Protection of the coastal environment by avoiding, remedying or mitigating any adverse effects of activities that alter the foreshore or seabed.”
146. Under this Policy 9.4.1.1.1 which sets out to avoid or remedy the adverse effects of activities that disturb or alter the foreshore and/or seabed on a number of matters including:
- (a) Marine habitats and sustainability
 - (b) Natural character of the coastal environment
 - (c) Water quality
147. Further Policies 9.4.1.1.7 and 9.4.1.1.8 specifically deal with the activity of marine farming.
148. Policy 9.4.1.1.7 provides recognition (by way of controlled activity status) of the importance of renewing the majority of existing marine farms authorised by applications made before 1 August 1996, while mitigating adverse effects on the environment by way of condition.
149. Policy 9.4.1.1.8 provides for minor adjustments to boundaries of resource consent areas for existing farms, without increasing their size, so as where necessary to reduce adverse effects or recognise existing locations of farms.
150. Policy 9.4.1.1.9 sets out to enable the adverse visual or ecological effects of particular farms to be addressed where the rules expressly provide for that.
151. Therefore while not providing any explicit guidance in this particular instance, it can be said that the objectives and policies of the Plan recognise and provide for the continuation and minor adjustments to existing marine farms, while seeming to expect that adverse effects on the environment of those farms.
152. In considering where the mitigation of those effects, it is necessary to refer back to Policy 9.2.1.1.2 specifies previously, which sets out that where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects to the extent practicable.
153. In the writers opinion this is a situation that is encompassed by the Plan that the proposal cannot be said to be contrary to the objectives and policies therein.

Marlborough Regional Policy Statement

154. The Marlborough Regional Policy Statement became operative on 28 August 1996. Those sections of the Policy Statement relevant to this particular application are listed in **Appendix A** to this report.
155. As discussed in the evaluation section of this report, the proposed extension would have adverse effects on benthic ecology. However the Policy Statement, through the Plan, does not set out to prohibit activities which give rise to effects, but rather to ensure effects are mitigated to the extent practicable.

New Zealand Coastal Policy Statement

156. The New Zealand Coastal Policy Statement 1994 sets out policies to achieve the purpose of the Resource Management Act in relation to the coastal environment of New Zealand. The principal policies that relate to marine farms concern matters of natural character. Policy 1.1.1 seeks to concentrate activities into those areas where development has already been compromised, and to avoiding sprawling or sporadic development in the coastal environment. In particular, Policy 1.1.1(c) concerns avoiding the cumulative adverse effects of use and development in the coastal environment.

157. Due to the factors discussed above and in the evaluation section of this report, it is considered that the proposal aligns with Policy 1.1.1 in that it is an incremental expansion of activity in an already modified area. However the natural priority of preserving the natural character of the coastal environment (of which the seabed is a part) must be taken into account.

Statutory Considerations

Resource Management Act 1991 – Part II

158. In reaching a decision regarding grant or refusal of consent, it is necessary to determine whether or not the proposal would meet the purpose of the Act as specified under Section 5, namely Section 5.1:

The purpose of this Act is to promote the sustainable management of natural and physical resources.

In this Act sustainable management means managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety while:

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonable foreseeable needs of future generations; and*
- (b) Safeguarding the life supporting capacity of air, water, soil and ecosystems; and*
- (c) Avoiding, remedying or mitigating any adverse effects of activities on the environment.*

159. In arriving at this decision it is also necessary to recognise and provide for those matters of national importance specified under Section 6. Those relevant to this application are:

Section 6(a) - The preservation of the natural character (of which benthic ecology is a part) of the coastal environment (including the coastal marine area, wetlands, lakes and rivers and their margins and the protection of them of inappropriate subdivision use and development,

160. And also have particular regard to those relevant matters specified under Section 77, which in this case are:

Section 7(b) - The efficient use and development of natural and physical resources.

Section 7(f) - Maintenance and enhancement of the quality of the environment.

Section 7(g) - Any finite characteristics of natural and physical resources.

161. In discussion as to whether this achieves the purpose of the Act, it can be concluded that the obvious social and economic benefits of the continuation and enhancement of the salmon farming industry would further the social and economic wellbeing of people and communities. The decision must therefore ride on Sections 5(2)(a), (b) and (c).

Section 5(2)(a) - Sustaining the need for the potential of natural and physical resource (excluding minerals) to meet the reasonably foreseeable needs of future generations

162. The applicant has submitted, on the basis of overseas evidence and the applicant's own experience with the Waihinau/Forsyth Bay sites, that the removal of the salmon farm enables the benthos below to return to its natural state within a period of approximately 3½ years.

163. Therefore if this is the case, it can be said that over time the effect of the salmon farm would be reversible and that the environment would return to its natural state at some stage in the future.

Section 5(2)(b) - Safeguarding the life supporting capacity of air, water, soil and ecosystems

164. The applicant has submitted that the impacts of this marine farm on the benthic community, although of some significance, are limited in extent and confined to the immediate area around the salmon farm.

165. In the writers view therefore, although this constitutes a more than minor effect on the benthic environment, that effect is restricted in range and does not compromise the wider environment to the extent that its life support capacity is not safeguarded.

Section 5(2)(c) – Avoiding, Remedying or mitigating any adverse effects of activities on the environment

166. The applicant accepts that there is some effect to the benthic environment below and around the salmon farm.

167. The applicant submits that total avoidance, remediation or mitigation is impractical, therefore sets out to limit the physical extent of the effects and to set parameters within the envelope of effect to ensure that the effects are known, quantified and monitored and, through adaptive management, to ensure that those parameters are not exceeded.

168. This is the crux of the Committee’s consideration. If it can be determined the adaptive management regime promoted by the applicant adequately avoid, remedy or mitigate any adverse effects of the salmon farming activity on the environment, then it can be said that the purpose of the Act is achieved and consent can be granted.

Conclusion

169. The above assessment of effects had identified that the actual or potential effects on the environment arising from the extension of activity would be the deposition of faeces and uneaten food on the seabed and to a degree the release of nitrates into the water column.

170. It is accepted by the applicant that these effects are more than minor and accordingly it is proposed to establish an adaptive management regime that sets spatial boundaries and defines a scale and intensity of effects (zoning approach) and ensures that these parameters are not exceeded through monitoring programmes.

171. The Committee will however need to determine whether such an approach is practical if structures are to be moved around the permit area.

172. Countered against this are the additional social and economic benefits that would be created by an increase in salmon farming activity.

173. It is therefore necessary to determine whether an increase in activity that has any adverse effects, balanced against a presumed increase in social economic benefit, meets the purpose of the Act.

174. No recommendation has been formulated at this stage.

Estimate of Meeting

Based on an assessment by the Resource Management Officer, it is anticipated that the hearing of this application will take approximately 6 hours.

Should consent be granted then a recommended suite of conditions is attached as Appendix C.

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KEITH HEATHER
RESOURCE MANAGEMENT OFFICER

30 November 2004