

Kenepuru & Central Sounds



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Dear Sir

Combined Submission – Proposed Expansion of Salmon Farms in the Marlborough Sounds

1. The Minister for Aquaculture (and also for Primary Industries) has called for comments on his proposal (**Proposal**) to use his powers under section 360A to 360C of the Resource Management Act (**RMA**) to make regulations amending certain provisions of the Marlborough District Council Plan (**Plan**). This is to enable up to six new salmon farms to be located in areas in the Marlborough Sounds currently prohibited for such aquaculture operations under the Plan. These farms are to be allocated to New Zealand King Salmon (**NZKS**).
2. This proposal is of grave concern to the Kenepuru and Central Sounds Residents' Association (**KCSRA**) and the Pelorus Boating Club (**PBC**) -collectively referred to hereafter as the "**Societies**". To husband scarce resources and given the extreme time constraints placed upon the Societies to respond **in opposition** to this appalling proposal, the Societies have agreed to work together and present their joint comments in this combined submission.
3. Five of the six proposed farms are located in the Central and Outer Pelorus Sound and these proposed new farms are the primary focus of the Societies. However, for the avoidance of doubt, the Societies **are opposed** to all six of the proposed new farms.
4. We **wish to appear** (together with our legal advisor and experts) before and be heard by the Advisory Panel constituted by the Minister to receive this submission and report and make recommendations to the Minister. The Societies have worked closely with Friends

Kenepuru & Central Sounds Residents Association Inc.

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of the Nelson Haven and Tasman Bay Inc (**Friends**) in preparing this submission and that of Friends and accordingly for the reasons set out in paragraph 47 of this submission wish to **jointly appear with them** at the hearing of the Advisory Panel.

Structure of this Submission

5. The structure of this submission is as follows:
 - Some background as to the nature and history of KCSRA and PBC.
 - The Societies' role in the preparation of and support for the Friends' submission.
 - Some background as to why the Societies are interested in this Proposal and in particular their respective roles in the 2012 Board of Inquiry and the Marlborough Sounds Salmon Working Group.
 - Some overview comments on the role and terms of reference of the Advisory Panel and the legislative basis of the process around the Proposal.
 - The findings of the Societies' review of some of the reports and papers prepared or commissioned by the Ministry for Primary Industries (**MPI**) in support of this Proposal under various subject headings.

Background Information on the Societies

6. KCSRA was established in 1991, and currently has approximately 280 household members whose residents live full-time or part-time in the Kenepuru and Pelorus Sounds. The KCSRA's objects include, among others, to coordinate dealings with central and local government and promote the interests of residents of Kenepuru Sound and adjacent areas, and to promote and act in the best interests of residents, ratepayers, and persons associated with the Kenepuru and Central Sounds area (which, for clarity, in the context of this submission includes the Outer Pelorus Sounds).
7. The KCSRA website (www.kcsra.org.nz) demonstrates that KCSRA is very busy representing the interests of members in a wide variety of matters. For example, advocating for better and safer roads and provision of public toilets in places of high visitor use; liaison and representations to the local council; and involvement in local environmental/conservation issues. An important aspect of the Sounds is the marine space.
8. PBC was formed in 1969 and is based in Havelock. PBC presently has 515 boats registered, with over 200 of those boats holding permanent berths in the Havelock Marina. In addition there are a significant number of PBC boats permanently berthed in Nelson and Waikawa Marinas.
9. The main cruising ground of PBC members includes the whole of Pelorus Sound and D'Urville Island, but primarily Kenepuru & Chance Bay in the Inner Sounds, and Ketu Bay/Port Ligar area in the Outer Sounds, and Tennyson Inlet in the Western Sounds. D'Urville Island and the Outer Queen Charlotte Sound are also within the main cruising

area for PBC members. During the summer months it is often hard to find an unoccupied Club mooring in the Outer Pelorus Sound and many moorings end up with more than one boat rafted up overnight.

10. PBC in association with Waikawa Boat Club (WBC) and Mana Cruising Club (MCC) jointly own and maintain 98 moorings throughout the Marlborough Sounds and D'Urville Island. These moorings provide safe haven in inclement weather and enable public access at minimal environmental impact to the very special marine environment of the Marlborough Sounds area. Collectively the three clubs represent over 1500 member boats and the majority of recreational boating users of the area.
11. The large membership reflects the high regard held by recreational boat users for the pristine environment of the Marlborough Sounds. PBC encourages safe practice in the use and management of recreational boats for all uses including cruising, relaxation and recreation, responsible fishing, and enjoyment of the natural marine environment.
12. Membership is drawn from as far away as the Central North Island and even Auckland to Dunedin and Central Otago in the south. This further underlines the importance of the Marlborough Sounds as a national asset of importance to recreational users.

Why we are interested in the well being of the Sounds marine space

13. In recent times it has become clear to the Societies that the marine space in Kenepuru and Central Sounds region of the Sounds is under real pressure from the adverse impacts of a number of commercial marine activities. This concern is reflected in the Marlborough District Council's (MDC) recent "State of the Environment Report 2015" which records that the Sounds biodiversity, for example, is not in good shape. The Societies have worked together to protect their members' legitimate interests and that of the wider New Zealand public in what MDC refers to as the "jewel in the crown", by challenging industries' seeming sense of entitlement to exploit this area without regard to sustainable environmental values.
14. By way of example, at the Environment Court level¹, we were successful in stopping an application for expansion of an existing mussel farm (4 hectares to 15) in an area where the Court agreed with: firstly, our Landscape expert that the expansion would have a significant adverse effect on the natural character of the affected coastal environment and landscape, and, secondly, our expert navigation witness's evidence that in a recognised navigation route the application would have a more than minor effect on safe navigation.
15. The Societies have worked together with another local community group to bring a sense of sanity to the otherwise reckless disregard by commercial interests that their unsustainable harvest desires was leading to the rapid downward decline of the Marlborough Sounds scallop fishery. Our vigour in this struggle was heightened by the realisation that despite industry claiming an economic self-interest in maintaining the scallop resource the reality was somewhat different.
16. Among individual industry operators, the "tragedy of the commons" syndrome overrides the greater industry self interest as demonstrated by the total collapse - without any signs of recovery - in the once bountiful scallop fisheries in Tasman and Golden Bays. To our alarm the same scenario appeared to be playing out with the fast depleting Sounds

¹ Clearwater Mussels Limited et al v MDC [2016] NZEnvC 21 (paras 87,113 and 228)

scallop fishery. As a result of our urgings, and against the opposition of industry representatives, the Sounds scallop fishery was closed in order to try and conserve and rebuild the stocks.

17. We present these examples (and happy to provide more² to the Panel at the hearing) in order to demonstrate our more than passive interest in the well being of the Sounds. It underlines our willingness (at no small effort), and the unfortunate but pressing need for community groups such as the Societies, to supply a much needed guardianship role in respect of the Sounds and its flora and fauna (eg the endangered King Shag).

Board of Inquiry

18. In late 2011 New Zealand King Salmon (NZKS) instigated a process under the RMA to try and obtain resource consents for nine new salmon farms in the Sounds. Eight of these were to be located in areas prohibited for salmon farming. This required a plan change. In due course a Board of Inquiry (BOI) was constituted to hear submissions from the public. The Societies, along with other community groups and the MDC, reacted adversely to this proposal and the Societies each separately contributed significant time and resources to opposing this proposal. Ultimately at the conclusion of the BOI process and the resultant litigation to the Supreme Court, NZKS was awarded three new farms, two in the Pelorus Sound (Waitata and Richmond) Waitata Reach area.
19. In reaching its decision, the BOI established, it is **submitted**, a cumulative threshold level for further salmon farming in the Waitata Reach at the two new farms. Among other things, these required a staged process by which feed levels might be increased and a full adaptive management and monitoring regime to determine whether the appropriate environmental quality standards were being met. The BOI's concern at the potential effects on the water column in the light of inadequate information and the need for a robust monitoring and adaptive management regime is highlighted in strong language at paragraphs 438 and 439 of the BOI decision.
20. We emphasise that in relation to the two new BOI farms in the Pelorus/Waitata Reach area, there has been **no** monitoring report or assessment prepared as at writing in respect of NZKS operations on these farms.
21. The BOI was equally emphatic about the decisive cumulative adverse effects on the natural landscape and character of having five new farms in the entryway to the Pelorus Sound and Waitata Reach. We also note the historic Supreme Court decision³ concerning the role and place of the New Zealand Coastal Policy Statement around landscape and natural character values.
22. In a recent Environment Court case⁴ the findings of the BOI in these areas were, it is **submitted**, endorsed, when it rejected an application for a further fish farm off Danger Point in the same general area. Accordingly, **it is submitted**, it was entirely reasonable for the Societies and indeed the New Zealand public to assume that there would no more fish farm applications in this area for some time.

² Eg., the issues canvassed in Davidson Family Trust v MDC [2016] NZEnvC 81

³ EDS v NZ King Salmon [2014] NZSC 38

⁴ KFP Investments v MDC (2014) 18 ELRNZ 367

23. Thus we are sure, **it is submitted**, the Panel can now appreciate the Societies' disbelief and anger as this Ministerial proposal to use the executive order process set out in Sections 360A to 360C of the RMA, against the more usual and robust plan changes process, was slowly unveiled by MPI.
24. Whilst this submission and that of Friends covers in more detail the significant adverse environmental impacts this Proposal, creates we briefly illustrate one aspect at this point. This is to enable the Panel to better understand on a "heads up" basis the reaction of the Societies to this appalling and inappropriate proposal.
25. The proposal has been touted by MPI as a relocation proposal - shifting existing farm operations to "better" locations in order to provide environmental gains. In this regard, MPI suggests that the utmost care has been taken so it is a "like for like" replacement of existing farmed area. This is, **we submit**, cynical in the extreme.
26. Firstly, two of the farm sites to be relocated (the Crail Bay sites) have not been farmed for more than 5 years. Indeed the farm structures have been dumped on the foreshore. Accordingly, it is submitted that, in reality, these salmon farm sites have been abandoned by NZKS. There are no environmental gains to be had there.
27. MPI glibly suggests that as the surface area of the new replacement farms is to be similar to the "existing" farms at Crail Bay, Waihinanu and Forsyth Bays then, environmentally, all must be well. The reality is, **it is submitted**, that this is not a "like for like" replacement. This is easily illustrated by a quick comparison of the current and proposed feed levels. At the existing farms the level of feed discharge is a little less than 6000 tonnes. At the new proposed sites MPI is arguing that the permitted feed discharges be set at around 25,000 tonnes.
28. Since when was an increase by four or five times "like for like"?
29. We are also acutely aware that NZKS is in no way committed to giving up these "poor" sites with talk of using Forsyth and Waihinanu as support sites - salmon smolt rearing areas. Salmon smolt, small though they are, must eat and defecate just like more mature fish.

Comments re MSWG Process

30. MPI appears to have commenced work on this proposal very soon after the BOI process finished. In 2016 the Societies became aware of this work as various rumours started to emerge of a new NZKS salmon farm proposal. Representatives from the Societies, along with a large number of representatives from other concerned community groups, attended a MDC committee meeting following a tip off that MPI was going to formally present such a proposal. As it happens, perhaps because of the intense and visible community presence, this did not eventuate.
31. The Societies followed up and eventually it emerged that MPI was to convene a Marlborough Salmon Working Group (**MSWG**). Two KCSRA representatives agreed to attend the meetings and wade through the detail. They and the Societies were led to believe that the thrust of the MSWG deliberations was to consider options whereby the existing NZKS salmon farms in the Sounds adopt the best practice management guidelines recently developed for the BOI farms. Meetings of the MSWG were to be

assisted by an independent facilitator who would be independent of the process and not take a particular position on the topic being discussed.

32. Very quickly it became apparent to community representatives that the real objective of MPI was quite narrow and something different. That is, to justify via the so-called relocation approach a number of new farm sites for NZKS in areas currently prohibited for salmon farming. Community representatives worked hard to “turn the MPI ship around” to little effect. Various community MSWG representatives on several occasions documented their concerns.
33. This correspondence trail can be seen on the KCSRA website (www.kcsra.org.nz, click on “Public Documents” and then the folder labelled New Salmon Farms). Alternatively try: www.kcsra.org.nz/documents.php?open=NewSalmonFarms
34. We recommend that the Panel spend a little time reading the KCSRA paper to the MSWG dated 13 October and in particular the opening two or three pages recording our representatives’ concerns and the closing KCSRA alternative options and recommendations. For ease of reference, **we attach as appendix 1 to this submission** a letter from the MSWG Sounds Advisory Group Representatives dated 23 September 2016 and a copy of the KCSRA letter to the Minister dated 8 December 2016 also outlining various concerns.
35. As the Panel may be aware, MSWG community representatives at the onset also raised potential conflict of interest issues around the MPI selected independent facilitator. These were, with assurances from MPI, put to one side. Accordingly, the unfortunate incident where the independent facilitator decided to adopt, research and advance a legal viewpoint in opposition to that being raised by community representatives was extremely unfortunate. Particularly as the matter concerned the very important issue as to the findings of the BOI over cumulative thresholds in the Waitata Reach. This event was most damaging to community confidence in the likely outcomes from the MSWG.
36. We have spent a little time on this aspect, **it is submitted**, in order to disabuse the Panel of any notion that the final MSWG Report generated by MPI fairly reflects the views of the community representatives who participated in this deeply flawed, self-serving and bruising MPI dominated process.

Overview of the policy basis of the MPI Proposal

37. The legislative process chosen by the Minister of Agriculture sidesteps the usual route by which a plan change (as this proposal is, **it is submitted**, in both form and substance) and avoids the usual oversight of a specialised Court such as the Environment Court or that of even a quasi-judicial process such as a Board of Inquiry. In the course of the MSWG, the MPI view as to why this was a preferred approach seemed to be that the BOI process was “too uncertain” in that it had failed to deliver the desired outcomes.
38. This seems, **it is submitted**, a very poor justification not to use the well-tested, robust and transparent usual plan change approach via the Environment Court or a Board of Inquiry, in favour of an approach where the “applicants” case is properly tested. Unfortunately, it seems that this is exactly what MPI wishes to avoid.

39. Fortunately for the environment, the proposed legislative route is not entirely a blank canvas for the Minister (aided by officials) to decree what they think fit. Section 360B of the RMA sets out a large number of matters the Minister must have regard to or be satisfied with before he or she procures the promulgation of regulations amending the Marlborough plan under Section 360A.
40. However the Panel's terms of reference, as drafted by MPI, has, **it is submitted**, a heavy focus on the clear desire of MPI and the Minister to have confirmation that this Proposal is in accordance with the Government's policy for aquaculture in the coastal marine area.
41. By way of example, under the heading of the Panel's Purpose, when testing the material before it, the Panel is directed to keep in mind the provisions of the Government's aquaculture policy and, seemingly as something of an afterthought, the RMA. We will leave it to the experts to comment on whether the likes of Section 360B of the RMA in actual fact makes such a distinction and somehow elevates the policy above that of the other relevant provisions and instruments of the RMA but will briefly turn to what we understand is the Government's policy document.
42. In April 2012 the then Government released a paper entitled "The Government's Aquaculture Strategy and Five Year Plan to support Aquaculture". This is the "policy" we assume the Minister is referring to. The then Minister's foreword makes it clear that this plan essentially adopts the self claimed aspiration of the aquaculture industry to achieve annual sales of NZ 1 billion in value by 2025.
43. However the policy document makes clear, **it is submitted**, that this is not to be a rush for marine aquaculture growth at whatever cost to the environment. By way of example, growth is to be underpinned by strong environmental performance, the word sustainable is referred to many times as is our "clean green " reputation and our environmental standards being second to none.
44. Accordingly, **it is submitted**, that this submission and that of Friends highlights the many areas in which this Proposal falls well short of the stated government aquaculture policy environmental objectives. This is to say nothing of, **it is submitted**, failing the other checks and safe guards, Parliament (thank goodness) saw fit to impose on what is otherwise a very disturbing enhancement of executive power.
45. Another aspect of this Proposal that the Societies struggled with was the MPI assertion that this Proposal was one of regional or national significance. As can be seen from our review of the MPI claimed regional economic benefits, they are greatly (as usual) exaggerated. On closer examination the Proposal does not deliver (in broader economic terms), **it is submitted**, much in the way of regional economic benefits (as opposed to say possible economic benefits for management and shareholders of NZKS) and a lot in the way of significant and adverse environmental impacts.
46. Does this mean that in the absence of any other environmental and economic benefits that the more adverse the environmental effects a government agency is proposing to an iconic nationally significant area, the stronger the Minister's case is to use section 360A? **We submit not**. Rather, **we submit** the Societies see this as another reason why the Panel, in making its report and recommendations to the Minister, should recommend **against the Proposal**. It is not, **it is submitted**, regionally or nationally significant in any positive sense.

The Friends Submission and the Societies Role.

47. One of the harsh lessons the Societies have learnt when stepping up to challenge unsustainable developments and environmentally detrimental activities in the Sounds is this. In order to be effective you need to support and present your case with the assistance of a good specialist lawyer. He or she in turn requires expert evidence to back up the existence of significant adverse environmental impacts, albeit that these adverse impacts may seem transparently obvious to the community.
48. This all requires money. For a plan change proposal of this nature there would usually be the chance of seeking funding from the likes of the ELA. Such funding is used to engage legal and expert advice so the community side of the case can be fairly put and contested. However this time round MPI has carefully selected a process where ELA funding is **not available**. We appreciate this is something of a back handed compliment as to the effectiveness of the likes of the Societies. However, **it is submitted**, that this brutal “tipping of the playing field” against effective participation by community and other groups is particularly galling given the large expenditure of taxpayers money to support the economic objectives of NZKS.
49. In response the Societies have agreed to work with another long established and effective local environmental group - Friends - who have pulled together a team comprising a specialist RMA lawyer and several experts covering a range of specialist expertise (Landscape and Natural Character, Planning, Avian, Benthic and Water Column issues). We have agreed to contribute time, money and resources in assisting Friends to pull this package of legal and expert evidence together in the very short time frame available. Accordingly, we **strongly endorse and support** the Friends’ submission and wish to appear with them at the hearing.
50. As appropriate we may touch on or repeat aspects of the Friends’ submission and associated expert evidence on these aspects in this submission **but stress** that the Societies’ full submission in these areas includes the matters set out in the Friends’ submission.
51. In passing, we note that we formally approached MPI for funding in order to enable our experts to attend any expert workshops the Panel might see fit to convene and decide to invite one or more of our expert team to attend. As at writing we have yet to receive confirmation (or not) of the availability of funding from MPI.

Legal Comment

52. The Societies in conjunction with Friends have used Mr Julian Ironside (Barrister) to assist in the preparation of this and the Friends’ submission. Mr Ironside makes a number of important legal points and arguments in his cover memorandum overviewing the Friends submission and package of expert evidence. We support and commend his comments to the Panel for your careful consideration.

Landscape and Natural Character

53. The Marlborough Sounds would, **it is submitted**, be regarded by the overwhelming majority of New Zealanders as a land and seascape of iconic value to the nation.

However, the Societies have learnt that this is not always so from the perspective of industry groups wanting to carry out developments in this land and seascape that may adversely impact on such values. Often they see it as not that outstanding, having already been modified by past or existing industrial developments and therefore more adverse impact (i.e. their proposal) can be tolerated. Indeed, some marine farm applicants routinely argue that much of the Kenepuru and the Pelorus Sound areas should be regarded as a “working farm” area. Thus the impact on landscape and natural character can be disregarded or devalued accordingly.

54. No doubt some of the drivers behind the development of the New Zealand Coastal Policy Statement (NZCPS) was to address, **it is submitted**, from a planning and RMA perspective, this diverse range of views on natural character and landscape values.
55. The Panel will be well aware of the master class the Supreme Court delivered in its land mark decision (*EDS v NZ King Salmon*) as to where in the hierarchy of RMA planning instruments the NZCPS sits. In passing we note the community was quite baffled by the BOI finding that an area could be seen as one of Outstanding Natural Character but could, *in the round*, nevertheless still be permitted to be significantly devalued by placing a large salmon farm in the ONL area. The relief the community felt when the Supreme Court decided otherwise was quite marked.
56. However as a result of the Societies participating in various cases (e.g. *Clearwater v MDC*) where landscape and natural character values were to the fore we appreciate the divergent views that exist among landscape architects. We also appreciate that the approach of MDC advisers in assessing landscape and natural values may, **it is submitted**, in many instances leave a little to be desired. Accordingly, the Societies were most relieved to retain the services of Dr Mike Steven.
57. We note the express reference to the NZCPS in section 360B whereby the proposed plan change must continue to **give effect** to the NZCPS. **We submit** that implementation of the Proposal in the Waitata Reach and Pelorus Sound area **would not do** so. In his expert submission, Dr Steven (**attached as appendix 2** to this submission) also finds, after a careful and through review, that the Proposal will result in significant adverse effects on natural character of the coastal environment, on landscape value (particularly with regard to aesthetic appreciation) and on visual amenity. **We submit** the Panel should in its report and recommendations to the Minister so state.

Economic Benefits

58. In the BOI, community groups such as KCSRA effectively introduced expert evidence to challenge the benefits being claimed by NZKS economic experts as manifestly exaggerated. What followed was a hurried backtracking by NZKS and the insertion of a second economic witness (Mr Kyle–Blake) to replace/assist the initial “expert”. The MDC economic expert Professor Hazledine sharply criticised the input/output (I/O) model used as unsuitable⁵ with a number of well-known failings.
59. This time around, again Mr Kyle–Blake (now of PWC - albeit retained by MPI) has stuck with the out-dated approach of the I/O model to again paint a glowing picture of regional benefits accruing from the Proposal. Our in-house expert, Mr Trevor Offen, has

⁵ See BOI Decision at paragraph 255.

reviewed the PWC EIA report and the peer review by EY. His report is **attached** as **appendix 3** to this submission. Once again, we find the economic benefits greatly exaggerated. We also took the opportunity to have Mr Offen's report peer reviewed by Mr Ian Harrison of Tail Risk Economics (see **appendix 3** of this submission).

60. As noted Mr Offen's full report and the peer review by Tail Risk Economics are set out in **appendix 3** of this submission. But by way of brief overview we note:
- The "relocation" of the six salmon farms is not needed to ensure the commercial viability of the NZKS operations in the Sounds.
 - The I/O method used by NZKS is inappropriate and leads to a **greatly inflated** "benefit" figure. We calculate the net economic benefit of the Proposal using a cost/benefit approach as being around \$7M per annum not the claimed \$43M.
 - Returns from labour (or FTE's) are fully captured and accounted for in GDP and net economic benefit calculations. It is double counting to refer to both GDP **and** the number of FTE's of the Proposal when presenting economic benefits.
 - We also note that the calculation of FTE's assumes a direct linear relationship between FTE's and NZKS output. This is likely to **significantly overstate FTE's**.
61. The Proposal is, **it is submitted**, on the evidence **economically insignificant** to both the Nelson and Marlborough regional economies.

Avian Issues – The King Shag

62. The people of New Zealand have been most fortunate to attract to our shores Mr Rob Schuckard who has had the expertise, dedication and persistence to bring the plight of one of our iconic sea birds, the endangered King Shag, to public attention. Mr Schuckard, through his tireless efforts via Friends and, in conjunction with the Societies, has been successful at the Environment Court level (e.g. *Davidson Family Trust v MDC*) in bringing judicial recognition of the unacceptable loss of this magnificent bird's habitat via marine farming applications.
63. We support and endorse his expert evidence as to the unacceptable and significant threats this Proposal presents to the King Shag. This evidence is attached to and forms part of the submission to the Panel from Friends (see also paragraph 49 of this submission).
64. Some summary points from his expert evidence include:
- The species is listed as vulnerable with, it is estimated, fewer than 1000 birds remaining.
 - Mr Schuckard's expert evidence is that the largest remaining colony site (Duffers Reef) is the colony most likely to be adversely affected by the Proposal.

- The massive increase in feed levels proposed to be discharged into the Waitata Reach and the consequential impact on the benthic and water column is likely, **it is submitted**, and as evidenced by Mr Schuckard, to have a significant adverse impact on the habitat and foraging efforts of the species.
 - Increased discharge levels (and in particular that of nitrogen) from the Proposal will, **it is submitted**, enhance the likelihood of the occurrence of harmful algae blooms and threaten King Shags and other seabirds in the manner described in Mr Schuckard's expert evidence.
 - We concur with Mr Schuckard's comments that the evidence of the MPI commissioned experts in this area is flawed or is too quick to conclude, by relying on optimistic assumptions, that all will be well if the Proposal goes ahead.
65. We **submit** that the case has been well made that the Proposal has significant adverse impacts for the endangered and vulnerable and nationally endangered King Shag, which is unacceptable and contrary to the spirit and intent of the RMA, and, for that matter, what we understand is the government aquaculture policy.

Benthic Issues

66. A quite staggering aspect of this Proposal is the complete disregard of the findings and caution expressed by the BOI in allowing two new farms in the Waitata Reach region particularly around the adverse impacts of feed and related faecal discharges in terms of adverse impacts on the benthic and water column. In essence, the BOI agreed to the two farms but only on the basis of a comprehensive and cautious staged approach with extensive monitoring and a programme of adaptive management.
67. The fact of the matter is that, although the new farms have been stocked (in the case of Waitata since January 2016), MDC has confirmed there have been no monitoring reports completed let alone assessed. It is, **it is submitted**, unreasonable and indefensible to be putting this Proposal up at this point in time.
68. There has been some suggestion from MPI that this is a relocation project with a "like for like" exchange. That is, **it is submitted**, an outrageous claim.
69. As we calculate it, the farms to be relocated have a feed use of around 5500 tonnes with the Proposal arguing for something like 23,000 tonnes in the four Waitata new sites. Whether one focuses on what goes in or what goes out, this is a massive increase and intensification of discharges in a relatively confined area. Remember the two BOI farms will also be operating putting up to an additional 10,000 tonnes of feed into the water. We will be moving from two to seven large salmon farms in a confined area.
70. We note that Mr Schuckard in his evidence has spent a little time laying the evidential framework around the proposed feed discharges and consequential faecal and other discharges and their likely significant adverse impact on the benthos. We commend that evidence to the Panel. We stress that Mr Schuckard was directly involved as a community representative in the working group that developed (read negotiated with NZKS) the best management practice guidelines for salmon farming re the benthic

considerations. Accordingly, he has more than a good working knowledge of likely adverse benthic impacts from this Proposal.

71. In this regard, we note his analogy to enable lay folk to get a feel for the scale and magnitude of this Proposal. He does this by looking at what the nitrogen discharges from what is proposed might represent in people terms. He estimates it is equivalent to around a town of 180,000 people. We stress this same exercise was done at the BOI and the BOI found the figures produced by Mr Schuckard there both credible and useful⁶.
72. Finally, we reject the idea that somehow distributing a greatly increased level of discharge into a wider benthic footprint year after year, as is proposed, is somehow a win/win for the benthic environment. This proposal, **it is submitted**, is all about the degradation of the benthic environment without proper regard for significant adverse environmental impacts.

Water Column Issues

73. Elsewhere in this submission and in the likes of expert evidence prepared by Mr Schuckard and Ms Sylvia Allen, the magnitude of what has been proposed in terms of discharges has been clearly articulated and we do not intend to repeat that. However, we think it appropriate to point out to the Panel that in the context of water column effects and modelling Mr Schuckard is, **it is submitted**, well qualified to comment. He has been heavily involved in the review of water column effects in various specialised working groups. Accordingly, his evidence in this area should, **it is submitted**, be given real weight.
74. However, we believe it would be useful to refresh the Panel with the concerns of the BOI around this issue.
75. From the language used by the BOI in the context of its discussion on effects on the water column, it was clearly alarmed around possible adverse effects of the proposed level of discharges and the modelled effects on the environment. For example, it talks about an “*astonishing gap*” in the prediction of effects⁷. And again, “*It is a fundamental failing in the assessment of effects on the environment*” that the BOI would not have expected to see in a project of this magnitude and importance⁸.
76. The BOI did allow two new farms into the Waitata but this was predicated on the expectation that there would be strong and robust monitoring, assessment and adaptive management. Mr Schuckard’s evidence covers these aspects in more detail and we commend it to you. Suffice to say, there has been no annual monitoring reports or assessments (and thus no comparison with actual against modelled effects) done to date and the first programmed wider review is at least two or more years away.
77. Accordingly, KCSRA approached this section of the MPI effort with real concern. Our concerns, **it is submitted**, were well warranted.
78. We have reviewed the various scenarios put up in the modelling and like Mr Schuckard have a number of concerns as to why there has been this juggling of “baselines”. It

⁶ See paragraph 379 of the BOI decision.

⁷ See paragraph 438 of the BOI decision.

⁸ As above.

seems to the Societies to have, **it is submitted**, achieved a rosier outcome. We **recommend** that this be an aspect (among many) that any expert workshop on water column effects carefully reviews.

79. However, from the Societies' perspective the relatively short and accessible peer review of the model's predictions from Mr Knight raises a number of doubts in our minds over the use and reliability of the NIWA model. The Societies' internal reviewers commented unfavourably that the NIWA authors seem to be of the view, **it is submitted**, that the model works well other than where it suggests an adverse impact. But this is something of a false negative due to a tendency, it is suggested, for the model to over-predict such adverse effects. This less than, **it is submitted**, scientific based reasoning does not comfort the Societies.
80. However by contrast, we were particularly captured by Mr Knight's comment to the effect that perhaps it was excessively straining the ability of the model to predict finfish derived N inputs that represent almost a 1000% increase on existing inputs in some scenarios⁹.
81. The Societies believe the potential for unanticipated adverse effects concerning the water column seem so clear that our recommendation is, **it is submitted**, that it is prudent and environmentally wise to wait for the existing BOI farms to reach full capacity (or not) under a rigorous regime of **responsive and independent** monitoring and assessment.

Impacts of the Water Column Wastes on Scallop Beds

82. In this context, we must also raise the issue of the nearby struggling scallop shellfish beds in Ketu and Richmond Bays. As mentioned elsewhere in this submission, the Societies have been putting considerable effort into rescuing the Sounds scallop fishery from the ravages of commercial over-fishing. Harsh though it might seem to blameless recreational fishers we have had to lobby hard (but in the end successfully) to close the fishery to all in order to keep out the main fishing effort (commercial).
83. By way of background we record that the Societies have seen the collapse **and non-recovery** of the once immense scallop resource in Tasman and Golden Bays¹⁰ (see also paragraph 15). Many commentators point the finger for this state of affairs to a number of possible sources (other than catch effort) - in particular, sediment and nutrient loadings.
84. Once upon a time (2009), Ketu Bay was renowned for its bountiful scallop beds. They were much-treasured recreational and customary sources for these fish. These beds have been reduced to record low levels. MPI have formally confirmed¹¹ that there are several disease inducing organisms including Rickettsia-like pathogens present in diseased fish. We also underline that one of the causes MPI has identified in this report is "nutrient loading".

⁹ See page 15 of Mr Knights peer review.

¹⁰ In the 1994/1995 season records show that the commercial take from TG/GB was **809 tonnes meat weight** – MPI Fisheries Assessment Plenary November 2014 SCA7.

¹¹ For a copy of this short report go to www.kcsra.org.nz, click on the folder called Public Documents, then the folder "Scallops" and open the report dated 24 Nov 2015.

85. It should not escape notice that Ketu Bay (and Richmond Bay) are in close proximity and “downstream” to three of the proposed new sites. We are also assured that the waste from the other two proposed farms might also track outwards. And yes there is also the waste flow from the two BOI farms.
86. Despite the scallop fishery being closed for a year, the latest MPI commissioned biomass survey has confirmed little recovery as yet compared to other parts of the Sounds with viable beds (not many) where, touch wood, we may be seeing a levelling out of the downward plunge.
87. In terms of other causes, sediment loadings should not, **it is submitted**, be much of a factor this far out in the Sounds and given the (now) low level of any land-based farming/forestry activities. Rather, **it is submitted** by the Societies that on the balance of probabilities, the nutrient loading from the BOI farms are having a deleterious impact on this indigenous resource.
88. **It is also submitted** that it is almost inevitable that if the Proposal goes ahead, the significantly increased nutrient loadings from the farms will adversely impact in a significant way on this and other shellfish and fish species spawning grounds. Accordingly, the Proposal seems clearly, **it is submitted**, in breach of the likes of the NZCPS and the RMA and should not proceed.

Planning Issues in Relation to the Proposal

89. The Societies and Friends have been fortunate to have access to the skills, and experience of a well-respected senior planner Ms Sylvia Allen. Her evidence forms part of the Friends’ submission and we support and commend to the Panel her findings, comments and conclusions.
90. In particular, we note that she is critical of both the process and potential outcomes of the Proposal as well as the sense that as NZKS believes that as its current farms are having deleterious environmental impacts this somehow gives them a right to relocate.

Recreational Matters - Boating and Moorings

91. The principal asset of PBC and associated clubs is the moorings. Under the joint Mooring Agreement between PBC, MCC, and WBC (**Clubs**), the Clubs own 88 moorings located throughout the Marlborough Sounds and D’Urville Island. These are jointly managed in a pool (some moorings being owned jointly, others individually by the clubs). Members of the Clubs have the right to use all of the moorings in the pool. New moorings are periodically added. The Clubs incur considerable expense to obtain resource consent to establish and renew their moorings and to physically place moorings if consent is granted. Preparation of the application and consultation with the MDC, Department of Conservation and potentially affected parties also demands a considerable investment of time.
92. A typical cost per mooring is \$10,000 resulting in a total combined Club mooring investment of \$880,000. In the past some proposed moorings have been opposed due to perceived adverse effects.

93. In the Outer Pelorus Sound (referring to that area from Maud Island to the outer entrance of Pelorus Sound from Cook Strait and Allen Strait) there are 15 combined club moorings, and in addition there are a number of other moorings operated by other clubs. These are concentrated in Ketu Bay and Port Ligar/Bulwar, but with some moorings in Richmond, Wynona, and Waitata Bays and Warwick Beach.
94. The Clubs' moorings in the outer areas of Pelorus Sound are used very heavily over the spring, summer and autumn. During this period there are often no spare moorings available overnight and boats are frequently required to raft up with more than one boat per mooring. During the winter period there is less demand on the Clubs' moorings but it is unusual to find no moorings being used overnight.
95. Members of all three clubs use the pool moorings in the outer areas of both Sounds.
96. The location of the NZKS proposed farms in the Outer Pelorus would therefore, **it is submitted**, adversely and unfairly affect a large number of users of recreational boats on the Clubs registers.

Recreational Matters – Enjoyment of the Natural Environment and Amenities of the Area

97. One of the primary features of recreational boating within the Marlborough Sounds is the ability to access a wide range of areas of natural beauty, peace and quietness, away from the obvious influence of people and away from industrial development. Most recreational boat users will, **it is submitted**, readily acknowledge the importance to them of finding a nice peaceful bay with no houses, noise, machinery, development or indeed noisy (and often a little smelly) salmon farms on the water.
98. Over and above the impact of the magnificent seascape vistas, the natural character of the adjoining landscape of the Marlborough Sounds varies from pristine unmodified tall bush at one extreme to cleared farmland with houses and associated activities at the other extreme. Much of the land previously cleared for farming is in varying stages of regeneration back to indigenous forest or in pine forestry.
99. Pelorus Sound already has large areas where aquaculture is permitted including existing areas for fish farming (in areas zoned CMZ2). The areas where such uses are prohibited (CMZ1) include the pristine areas of Tennyson Inlet, some Inner Sounds areas including Chance Bay, and the main Waitata Reach from Maud Island to Cook Strait. They have been designated so under the Plan for very good reasons.
100. Within Waitata Reach, aquaculture is largely confined to the bays running off the main reach (ie Horse Shoe Bay, parts of Richmond Bay, Waitata Bay, parts of Bulwar and Port Ligar). Apart from the two new BOI Salmon farms, the main reach is free of visible marine aquaculture, which helps retain much of its natural character, especially as much of the adjoining landscape is regenerating from former farmland to indigenous forest.
101. The five new NZKS farm sites proposed for the Outer Pelorus Sound will, **it is submitted**, significantly and adversely impinge on the beauty and natural character of the main reach. It will introduce industrial structures with associated noise and light at night where currently there is none. We commend again to the Panel the expert evidence of Dr Mike Steven in this regard.

102. We stress that of particular concern is the the significant adverse impacts from the farm site proposed for mid Waitata Reach which lies directly in the main cruising route between Ketu and Port Ligar – the bays of most frequent use containing the majority of the Clubs moorings.

Recreation Matters - Fishing

103. The Outer Pelorus Sound is the predominant area for recreational fishing and species commonly caught include Blue Cod, Snapper, Scallops, Groper, Kahawai, Flounder, Kingfish, Terakihi, and various shark species.
104. In recent years scallops and blue cod in particular have become seriously depleted. In 2016 the Minister closed the Sounds scallop fishery entirely. The Societies played a major role in achieving this result, after several years of warnings, to mitigate the clearly (to the Societies) unsustainable commercial catch effort. Blue Cod are currently subject to severe catch restrictions having previously been closed for several years.
105. **Scallops** are, **it is submitted**, one of the most highly regarded recreational species in the Outer Pelorus with Ketu Bay, Horseshoe Bay, Guards Bay and Wynens Bank being the only remaining scallop beds of any note. Of these, only Guards Bay and Wynens Bank have sufficient numbers to maintain the viability of the wild scallop populations – Ketu and Horseshoe are in a seriously declined state.
106. Both Ketu Bay (once the mainstay of recreational scalloping, but also regularly commercially fished) and Horseshoe Bay are flushed by the incoming and outgoing tidal currents.
107. The location of the proposed salmon farms means that waste from the farms will be flushed through these last remaining scallop beds with every incoming and outgoing tide (ie four times a day). The effects of this are not, **it is submitted**, well understood, but with the scallops population in this area at such a critical point, recovery could be seriously jeopardised.
108. Accordingly, **it is submitted**, it makes no sense whatsoever to risk introducing further degradation to the water quality of these bays. The higher current flow at the proposed new farm sites simply means, **it is submitted**, that waste products will be carried further and dispersed more “efficiently” across the already heavily stressed scallop beds.
109. **Blue Cod** have been in serious decline for the last two decades. Considerable study has been done on the issue and certain conclusions have emerged which have implications for the proposed salmon farms at Horseshoe Bay and Blowhole Point – these also apply to the recently established farms at White Rocks and south of Ketu Bay.
110. Horseshoe Bay has reef structures on both sides of the northern point and both these areas are regularly also fished for Snapper by recreational fishers.
111. Blowhole Point has a reef structure extending between the farm sites and the northern farm site is directly over Blue Cod, Snapper and Kingfish habitat. Blowhole Point (along with Duffers Reef) is the innermost Paua and Crayfish habitat in Pelorus Sound. Members of the Societies have also expressed alarm at the possibility of significant

adverse environmental impacts from the waste discharges from the proposed Richmond Bay South farm onto the important (for the Blue Cod fishery in particular) Richmond Reef. Protection of these scarce and very important reef habitats is, **it is submitted**, vital to the long-term sustainable wellbeing of the affected fisheries.

112. Research (2009 – Glen Carbines) has shown that Blue Cod are not migratory and are unlikely to travel far from the reef structure they were born on. That means, **it is submitted**, if the Blue Cod population in a particular habitat is seriously depleted it is unlikely to recover for many years after the cause of depletion has been removed.
113. Both the Blue Cod and Scallop populations are, **it is submitted**, in serious trouble, with recreational fishers having taken massive reductions in catch limits with much more restrictive management regimes having been introduced to preserve the populations.
114. And yet with NZKS having seriously degraded the benthic environment under their existing farms footprint, MPI now proposes they be permitted to “re-locate” their salmon farms into areas that, **it is submitted**, will lead to further degradation of these last remaining viable habitats inside the Pelorus Sound.
115. This sounds, **it is submitted**, suspiciously like the very damaging “nomadic farming” practices which led to the desertification of large tracts of North Africa. It is most inappropriate.

Navigational Effects of the Proposal

116. In Outer Pelorus the location of all the proposed new Pelorus farm sites lie directly in the path of the navigational courses commonly used by recreational boats in accessing the Clubs moorings in Horseshoe Bay, Ketu Bay, Bulwar and Port Ligar.
117. We note that the routes used by recreational boats are not shown in the AIS tracks produced by the MPI commissioned Navigatus Navigational Risk Assessment Report. Why this is so, **it is submitted**, is obvious when it is understood that recreational boats do not as a rule have AIS transponders installed and therefore they will not show up in AIS tracking data. **It is submitted** that the Proposal in this respect is **entirely misleading** in that it **does not** provide any reasonable indication of recreational boat routes and frequency of usage.
118. We have **attached** a chart (*appendix 5*) showing the frequently used routes (routes shaded in blue) for recreational boats. We draw the Panel’s attention to the very commonly used passage between Ketu Bay and Port Ligar where the majority of Outer Pelorus Club moorings are located.
119. The proposed farm site in the middle of Waitata Reach lies directly on the route between Ketu Bay and Bulwar/Port Ligar, one of the most heavily used routes by recreational boats in the Outer Pelorus Sound. This area is often subject to wind and steep chop (see below), conditions that can obscure visibility of relatively low-lying surface structures. As such this site, **it is submitted**, will constitute a significant navigational hazard not only for boats transiting between Ketu and Bulwar/Port Ligar but also for boats transiting between the Pelorus Sound Entrance and the Inner Pelorus Sound and Tennyson Inlet.

120. In this area, inclement weather from the SE, SW, and NW is common and a steep chop up to 2m is not unusual. In such conditions recreational boats tend to look for the more sheltered water closer in to the lee shore when seeking passage to a safe mooring.
121. As a consequence of the farms proposed for Horseshoe Bay and Blowhole Point (and the new farms already established at Ketu South and White Rocks), boats will have to alter their courses to run 400 – 500m further offshore than they do at present, as travelling between a farm and the shore in such conditions would be, **it is submitted**, extremely inadvisable from a safety perspective.
122. In conclusion, **we submit** the proposed farms, in many instances, present real and unacceptable navigation risks for recreational users.
123. In passing we note that the Societies reviewers **recommend** that MPI be directed by the Panel to carry out a review of the GPS coordinates supplied, as there are some terrible errors. As we calculate it, for example, the Wiatata Reach farm is “located” some 10 nautical miles away from the indicative position shown on the MPI information. **Not a good look.**

Disease Issues

124. We **attach** at *appendix 4* of this submission a reasonably detailed account of how the Societies (and in particular KCSRA) at the time of the BOI became aware of and concerned at the increase in the likelihood of the establishment of fish related disease(s) in the Sounds as a result of the intensification of salmon farming. In that attachment, we outline the detailed research and investigations we have under taken to establish our views and concerns. We commend that report to the Panel and accordingly, confine ourselves, in this section, to a few high level comments.
125. Quite high levels of fish mortality and salmon farming go hand in hand. As to why, there are many reasons, not the least being the heavily stressed nature of the life of a caged salmon. Doomed to swim in a circle in a green rain of salmon faeces and being fed a highly unnatural diet does not seem a positive life style. Thus, MPI biosecurity is rightly concerned at the risk of the occurrence of unusual or significant mortality events being linked to the establishment of a new infectious fish disease in New Zealand waters.
126. There are two, **it is submitted**, components to this risk. One is the risk of disease and associated mortality events within the salmon cage populations. That is a clear and present issue in the Sounds and, we submit, will be an on-going risk despite the claims to the contrary by the proponents of this Proposal. The second is the risk of transference of diseases incubated and established within the salmon cages to other fish species – transference or “blowback”.
127. As discussed in *appendix 4* these risks are exacerbated by the fact that water temperatures **in all of the** Pelorus are marginal for salmon farming and conducive to the incubation of disease. This is magnified by, it is **submitted**, the lax and high-risk management practices of NZKS. We accept that disease outbreaks may require several stressors to converge, but we urge the Panel to take note of the fact that one stressor is regularly present at all the Pelorus proposed sites – water temperature well above the optimal range for long periods.

128. We stress the expert evidence at the BOI cautioning against the intensification then proposed was put to one side in favour of the more optimistic outlook taken by the NZKS experts who, it is submitted, placed some reliance on the absence of infectious and other pathogens known to cause problems elsewhere in the world being absent from New Zealand¹².
129. Sadly, we note some of the predictions of those cautionary experts have come to pass. In New Zealand, MPI Biosecurity has now isolated from dead Sounds salmon, a new and dangerous pathogen referred to as “NZ RLO” - New Zealand Rickettsia Like Organism. In terms of “blowback”, the MPI/NZKS expert arguing that again there is little or no risk no longer persuades us. We point again to the presence of rickettsia like organisms in the nearby struggling scallop beds.
130. On this factor alone, and given that it is very early days re the two BOI farms, we urge the Panel in its recommendations to the Minister to take a precautionary approach and recommend against this Proposal.

Better Technology with Better Solutions

131. At the BOI NZKS maintained that the existence of better cleaner farming methods was some way off, well over a decade. It is clear that developments in Norway and elsewhere have sharply accelerated that time frame¹³. We also commend to the Panel the more detailed comments on this aspect in the submission from well-known fishing issues entities Mr John Leader (retired biologist) and Des Boyce.
132. It **is submitted** that it would be prudent to allow the development of better technology that hopefully addresses issues around benthic and water column pollution bearing in mind the permits for the farms to be “relocated” still have a seven or so years to run.

The Marlborough District Council – Where?

133. At the BOI, the MDC made it clear that it needed to and intended to defend its Plan against the NZKS proposal. To that end it exhibited vigorous and effective leadership to the Marlborough Community. It retained a number of expert witnesses across a range of specialist fields who argued cogently against the proposal.
134. It committed the time and energy of a number of its officers to the BOI process who made careful and well-reasoned arguments against aspects of the proposal. From the reports of our community representatives on the likes of the subsequent working group developing better management guidelines for benthic matters, MDC staff made a reasonable stab at curtailing the attempts of NZKS to wind back these proposals. They shrewdly brought in a well-known and respected Scottish expert (Professor Black) to assist and mitigate the efforts of NZKS to water down these guidelines.
135. However, over the last year or so the Societies started to pick up some disturbing under currents. It seems central government was not at all pleased with the outcomes of the BOI process and the role of the likes of MDC in achieving recognition of the need to

¹² See paragraph 478 of the decision of the BOI.

¹³ See media reports eg <http://aquaculturenorthamerica.com/research/marine-harvest-tests-closed-egg-shaped-fish-pens/>

preserve and take account of environmental bottom lines. In recent times we have seen clear evidence of significant government pressure being placed on MDC with regard to its regulatory and planning role in the jewel of the Marlborough crown – the Marlborough Sounds. For example, the Societies noted with some disbelief the absence from the recently notified Marlborough Plan of the proposed aquaculture section.

136. Following the formal tabling of the this Proposal we found very hard to swallow the new mayor effectively confirming that the MDC (the owner of the Plan some might say) abandoning the field on the grounds they had no choice in the face of government support and the proposed use of an executive order via section 360A of the RMA. The Societies asked themselves with some bemusement just what had changed from the BOI proposal and this Proposal. The answer of course, in terms of the Proposals impact on the Plan, **nothing**; in terms of the potential adverse environmental impacts of the Proposal on the Sounds, **nothing**.

137. It **is submitted** that this approach by the MDC is a sad day for the future wellbeing of the Sounds in the face of an extremely undesirable Proposal involving the appropriation of pristine public space and significant adverse environmental impacts.

Conclusions

138. In this submission and the associated expert package of evidence in the Friends' submission we have substantiated, **it is submitted**, over a range of issues and subject matters why the Proposal is inappropriate and should be, and needs to be, rejected. Even the OECD, in its latest environmental performance report, underlines the fact that the New Zealand Government is privileging economic development at the expense of the environment. This is doubly unacceptable in the iconic Marlborough Sounds.

Yours sincerely

For and on behalf of

Pelorus Boating Club Inc

and the Kenepuru and Central Sounds Residents' Association Inc

Ross Withell

President

Kenepuru and Central Sounds Residents' Association Inc

Appendix 1

Two relevant documents from the MSWG

Kenepuru & Central Sounds



Kenepuru & Central Sounds Residents Association Inc.

The Hon Nathan Guy
Minister for Primary Industries and Aquaculture
Executive Wing
Parliament Buildings
Wellington

Ross Withell
President KCSRA
2725 Kenepuru Road
RD 2
Picton 7282
email: president@kcsra.org.nz
WWW: kcsra.org.nz

8 December 2016

Dear Sir

Marlborough Salmon Working Group – Some balancing comments and recommendations

1. As you may be aware from your officials from the Ministry for Primary Industries (**MPI**), the Kenepuru and Central Sounds Residents' Association (**KCSRA**) agreed to have two representatives participate in the MPI convened Marlborough Salmon Working Group (**MSWG**). Our agreement was predicated on a set of agreed terms of reference. At the end of that process your officials produced a report with a set of recommendations that we understand you will shortly take to Cabinet.
2. After reflection and discussion the KCSRA marine subcommittee who assisted and supported our representatives thought it appropriate and necessary to write to you to record our concerns over aspects of the process to the effect that considerable caution needs to be exercised before assuming that the MSWG report recommendations follow from a fair, open and considered process.
3. Rather we set out below what we consider to be a number of failings from the process together with a more representative set of recommendations from community representatives such as those from KCSRA:

Kenepuru & Central Sounds Residents Association Inc.

President	Ross Withell
Vice President	Andrew Caddie
Secretary	Brenda Sutton
Treasurer	Stefan Schulz
Chairman Roving Committee	Robin Bowron

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vicepresident@kcsra.org.nz
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- It was unfortunate that the agreed terms of reference with its stated aim of improving management practices in **existing** New Zealand King Salmon (NZKS) farms was in fact pushed to one side by MPI in favor of what was its clearly predetermined intent of exclusively focusing on promoting alternative sites.
- MPI never addressed how a NZKS entitlement to alternative sites arose.
- The fundamental issue of the Sounds as a long (or even medium) term suitable location for salmon farming given the likes of rising water temperatures and several recent unusual mortality events in NZKS farms was an off limits discussion.
- It was most unfortunate that much of the MPI supplied expert reports and material was sourced from consultants with a history of assisting/advocating for NZKS at the likes of the 2012 Board of Inquiry. In the case of the disease expert, he was, it seemed, unaware of the recent unusual mortality events and the MPI Biosecurity notice in place as a result of the same. The credibility of these reports was farther undermined by the absence of independent expert review in a number of key areas (e.g. disease and economics) which seriously weakened the likelihood of MPI achieving its desire to have the community representatives agree to a set of farm relocation sites.
- The large volume of material, often supplied at the last minute but with the expectation that MSWG members would nevertheless be expected to provide meaningful comment made for an unhelpful and time pressured environment that was not conducive to supporting positive outcomes.
- That there is no substantive case for putting forward the three Tier 2 proposed sites *Waitata mid-channel* (#125), *Blowhole point north* (#34), *Blowhole point south* (#122)) was ignored by MPI. Accordingly KCSRA **recommends** that these be dropped out of any proposed public consultation process.
- That the MSWG process raised serious legal questions from community representatives as to the wisdom of including the two Tier 1 sites located in the Waitata reach area (*Richmond bay south* (#106) and *Horseshoe bay* (#124)) which MPI have failed to satisfactorily address. Accordingly, KCSRA **recommends** that these issues be comprehensively addressed and discussed before these sites are put up as potential relocation sites in any proposed public consultation.
- Further, the two Tier 1 Waitata Reach sites raise substantive issues for public and commercial stakeholders (proximity to scalloping and recreational fishing areas) which were not reasonably addressed in any substantive manner. Accordingly, KCSRA **recommends** that these be further investigated and discussed before being put up as potential relocation sites in any proposed public consultation.
- Despite protests from community representatives there was no substantive discussion as to how existing NZKS farm sites could be managed on a more sustainable basis in line with Best Management Practice salmon farm guidelines. Indeed this aspect was avoided or at best hastily skated over. KCSRA **recommends** that MPI, with assistance and input from independent experts and other stakeholders, be directed to work to achieve this outcome.

4. MPI also employed, in our view, a number of unfortunate tactics to “dress up” the proposed report that seriously dented their credibility and thus the process. Thus for example it was quite disturbing for community representatives to discover that in a “final” draft, MPI had unilaterally decided to exclude its very active participation in directing and drafting outcomes by removing their and other government agencies representatives from the list of participants. Whilst ultimately corrected, this tactic diverted community representatives’ time and effort away from tackling other important issues with the report. Community representatives also had to uncover and then deal with what appeared to be MPI attempts to camouflage the cumulative effects of existing salmon farms in the Waitata reach in the biophysical modelling presented to the group. After reflection and discussion the KCSRA marine subcommittee who assisted and supported our representatives thought it appropriate and necessary to write to you to record our concerns over aspects of the process to the effect that considerable caution needs to be exercised before assuming that the MSWG report recommendations follow from a fair, open and considered process.
5. Against this background KCSRA would like to urge the Minister and his colleagues to take stock and implement a process where the merits or otherwise of granting NZKS additional salmon farming capacity in the Sounds are placed before a Environment Court Judge (or a suitably qualified independent panel) tasked with hearing and assessing the conflicting evidence, under oath, so the public can have a high degree of confidence in the environmental integrity of the outcomes in this much treasured area.

Yours Sincerely

Andrew Caddie

Chair Marine Sub Committee

Kenepuru and Central Sounds Residents’ Association

cc Minister of Conservation.

cc Minister for the Environment

Executive Wing, Parliament Buildings Wellington

REPORT TO SOUNDS ADVISORY GROUP MEMBERS

SUBJECT: MARLBOROUGH SALMON WORKING GROUP REVIEW

Rob Schuckard, Judy Hellstrom, Eric Jorgensen

February 13th 2017

Introduction:

- 1) The Minister for Aquaculture has opened consultation regards the potential relocation of up to six New Zealand King Salmon farms under S360a-c of the RMA. The decision follows receipt of the Advice to the Minister of Aquaculture from the Marlborough Salmon Working Group.
- 2) Judy Hellstrom, Rob Schuckard and Eric Jorgensen were nominated by Marlborough District Council to represent Sounds Advisory Group in the Marlborough Salmon Working Group. This debrief is prepared for Sounds Advisory Group members. It follows verbal updates at Sounds Advisory Group meetings through the second half of 2016. This report marks the completion of the Groups' work¹ (which included provisional advice to the Minister of Aquaculture on potential relocation and consultation options) and its' subsequent disbandment.
- 3) This report provides an overview of the Sounds Advisory Group members' collective opinions of the process they have worked through and next steps. Ordinarily the feedback would be provided at a meeting of the Sounds Advisory Group however the timing of the next meeting precludes this occurring.
- 4) In summary the report addresses;
 - a) The work was very rushed and lacked due process and checks and balances throughout, particularly with regards to assessment of alternatives for future salmon farming rather than relocating the farms within the Marlborough Sounds and ability to meaningfully analyse and question technical reports.
 - b) A number of the technical reports were distinctly lacking in scope and, therefore, conclusions drawn remain questionable.
 - c) As such, the Advice to the Minister of Aquaculture is based on incomplete information.
 - d) *Nonetheless, the Advice to the Minister of Aquaculture **does** draw attention to important Part II matters that, if raised through consultation, must be consider as part of any final decision.*
 - e) Of the nine potential sites assessed all members of the Marlborough Salmon Working Group without affiliations to the industry (and excluding MPI staff) were of the opinion only three should proceed to consultation.
 - f) While consultation principles were touched on by the group no recommendations for any consultation process was put forward and that decision, the consultation process, has been made by the Minister.
 - g) Project steps tabled by MPI included Marlborough Salmon Working Group engagement in the process up to and including public consultation and final advice (to the Minister). This changed without warning or discussion.
 - h) The decision to consult utilising s360a-c of the RMA and the timeframes allowed both conspire to severely limit meaningful public engagement in the process.

¹ See report <http://www.mpi.govt.nz/news-and-resources/consultations/marlborough-salmon-relocation/> (Marlborough Salmon Working Group advice report

- i) Further, to use s360a-c the analysis of of existing economic and environmental performance of the operative low-flow sites must be considered as a matter of national or regional significance. This is questionable.
- 5) The remainder of this report provides further details regarding;
 - a) Why the Marlborough Salmon Working Group was formed,
 - b) Sounds Advisory Group participation in that,
 - c) The process by which the Advice Report to the Minister was authored,
 - d) A broad overview of perceived strengths and weaknesses of that report, and
 - e) A broad overview of the perceived strengths and weaknesses of the consultation process adopted by the Minister.

Background:

- 6) In June 2016, the Ministry for Primary Industries (MPI) requested from the Marlborough District Council (MDC) three persons be nominated from the Sounds Advisory Group (SAG) to be on, what was to become known as, the Marlborough Salmon Working Group (MSWG), a multi-stakeholder working group tasked with collaboratively assessing options for the future of six New Zealand King Salmon farms. At the SAG meeting on June 21st 2016 SAG members nominated Judy Hellstrom, Rob Schuckard and Eric Jorgensen to fill those positions and MPI were duly advised of this.
- 7) The formation of the group was driven by MPI (and to a much lesser extent MDC) to assess whether New Zealand King Salmon farms presently not meeting Best Practice Benthic Guidelines could move to a state of compliance with those guidelines and, if not, determine whether there were other potential locations within the Marlborough Sounds where salmon farming may be appropriate.
- 8) The documented purpose (or objectives) of the MSWG were:
 - a) to consider options for existing salmon farms in Marlborough to adopt the guidelines; and
 - b) to ensure the enduring sustainability of salmon farming in Marlborough, including better environmental outcomes including landscape, amenity, social and cultural values.

Marlborough Salmon Working Group Process:

- 9) The MSWG meet a total of ten times through 14th July September to October 28th 2016. The broad process *adopted*² was;
 - a) Overview of existing, low-flow, salmon farms and options to comply with Benthic Best Practice Guidelines.
 - b) Site visits to existing and potential salmon farm sites in Pelorus and Tory Channel³.

2 Note that the actual process deviated from the project steps and timeline prepared and tabled by MPI; particularly post-completion of the MSWG Advice Report to the Minister of Aquaculture.

3 The group has very little information on the process and supporting information that concluded the (nine) potential sites were potentially suitable.

- c) Initial technical analysis presented and discussion of conclusions drawn (SWOT analysis).
 - d) Drafting and finalisation of Advice to Minister report.
- 10) In and of itself, the process at a high level appeared reasonably robust however as we commenced our work SAG (and other) members of the MSWG identified several concerns, notably (with consequence in *italic*);
- a) Detailed actions for each major step were not fully known (or were not communicated) at the outset and, in terms of MSWG involvement the process was truncated.
 - i) *Little understanding of how each step linked and informed subsequent steps.*
 - ii) *Some, unresolved, matters were allowed to stand on the basis the MSWG would have continued engagement up to and including the writing of the final advice paper. This has not occurred and, in our view, particularly effects the entire consultation process and outcomes and, likely, the scope and veracity of final advice.*
 - b) The process was informed by up to eighteen technical reports prepared by external experts. Group members have not, to this day, sighted the Terms of Reference for the engagement of those experts nor for the scope of the reports themselves.
 - i) *Context of reports not fully understood.*
 - ii) *Too narrow a scope meant not all matters important to decision making assessed.*
 - c) The reports totalled some 1200 pages in total and were often very technical in nature.
 - i) *There was not sufficient time to fully comprehend all reports and report content.*
 - ii) *Reports continued to be altered/updated until very late in the process making overall assessment difficult with this 'moving target'.*
 - iii) *There remained some instances where the Advice utilised non-reconciled statements.*
 - d) The reports, in several instances, were authored by parties that gave evidence on behalf of NZKS at the Board of Inquire hearings.
 - i) *This, particularly when associated with above concerns, raises the issue of conflict of interest.*
 - e) Several reports were clearly lacking in scope.
 - i) *In some cases, review of the reports found significant omissions to scope (e.g. Social impact assessment only assessed impacts on neighbouring properties or those with line of site and no other users of the areas. Tourism and Recreation report only canvassed Tourism operators and DoC, not other recreational users of the Sounds and Navigational Safety did not canvass the Marlborough Harbour Master and the Economics report did not initially assess the financial performance of existing low-flow sites).*
 - ii) *This lack of scope meant findings of report potentially invalidated.*
 - iii) *Some reports were altered seemingly 'on-request' in response to specific matters raised.*

- iv) *A common response to lack of scope in reports was that those matters would 'be explored' through consultation. There can be no assurance that this will occur.*
 - f) Many reports (including bio-physical and economic reports) were only finalised very late in the process.
 - i) *Latest changes to technical reports were not robustly assessed.*
 - ii) *This meant the findings were largely inserted into the advice paper as summarised/outlined by MPI.*
 - iii) *This places significant reliance upon the expert caucusing scheduled to occur during consultation.*
 - g) MSWG members were unable to discuss the process, information received or deliberations outside of MSWG members during the process.
 - i) *Inability to canvass alternative experts may mean errors/incorrect conclusion may remain in advice that MSWG members have not recognised.*
 - ii) *Inability to canvass alternative experts meant technical reports (prepared as above, some with inherent weaknesses) remained as 'best information' and utilised for the Advice report.*
- 11) SAG members on MSWG wrote to MPI's Deputy Director General Sector Partnerships and Programmes on two occasions outlining, what they considered to be, matters of significant concern. At the conclusion of our involvement in the relocation process it is fair to say these concerns, remain unresolved and are as valid today as they were when first raised. Matters raised included unrealistic timeframes to properly consider technical reports, inability to 'test' tabled technical reports with experts outside of the MSWG, unreconciled information and statements and concerns with the approach to consultation process design.

Synopsis of Advice report content:

- 12) The Advice report to the Minister of Aquaculture addresses a number of the critical components required to provide that advice. It must be remembered the Advice report was produced to assist the Minister on determining whether that matters at hand should proceed to public consultation.
- 13) It must be noted that the Advice report does not address the second part of the MSWG's objective *(to ensure the enduring sustainability of salmon farming in Marlborough, including better environmental outcomes including landscape, amenity, social and cultural values)*. The scope quickly narrowed to the NZKS low-flow farms and potential relocation sites.
- 14) Similarly, many areas of the report do not receive the attention and detail SAG MSWG members feel should be warranted. In particular, sections detailing;
- a) Options to implement Benthic Guidelines, including options for existing low-flow sites,
 - b) Other considerations and Risks, and
 - c) Assessment and analysis of different aspects/criteria for potential relocation sites (for reasons outlined above) not robust nor detailed enough.

- 15) That said, one of the potential uses of the Advice report and the section on Assessment of potential location sites is that it does manage to highlight a number of important matters that remain unresolved and require further analysis.

Synopsis of Consultation Process adopted:

- 16) As noted above MSWG members' engagement in the process abruptly ended once the group had agreed the content of the Advice report and did not have input into the legal route taken nor the consultation process design.
- 17) Government have chosen to consult a plan change under s360a-c of the RMA. This enables the Minister to rewrite aquaculture plan provisions if certain tests are passed. The analysis on how the Minister could be satisfied that the proposal is of national or regional significance, a necessity for using section 360, is unclear and it is questionable whether the current situation regards the economic value and environmental impacts of the low-flow NZKS salmon farms warrants use of this section of the Act.
- 18) The consultation process could be perceived as lacking integrity and may not meet the requirements, as set out by the Environment Court as being the principles for consultation, because;
- a) There is insufficient time to meaningfully review, question and develop a position on the vast array of information presented. A similar criticism of the early process.
 - b) Incomplete expert technical reports have been placed into the public domain; without those incomplete areas being made known.
 - c) There can be no cross-examination of the expert technical reports authors, reports which are knowingly incomplete and yet form the basis of the case to proceed with farm relocation.
 - d) The wider public has no ability to apply for financial support that would ordinarily be available through usual channels.
 - e) Overall, it is difficult to consider that the process adopted is 'fair' to all parties.

Appendix 2

Evidence of Dr Michael Steven Landscape and Natural Character

BEFORE THE MARLBOROUGH SALMON FARM RELOCATION ADVISORY PANEL

IN THE MATTER: SECTION 360A OF THE RESOURCE MANAGEMENT
ACT 1991

AND

IN THE MATTER: A PROPOSAL TO AMEND THE MARLBOROUGH
SOUNDS RESOURCE MANAGEMENT PLAN TO
ENABLE THE RELOCATION OF UP TO SIX EXISTING
SALMON FARMS

EVIDENCE OF DR MICHAEL LAWRENCE STEVEN

FOR

**FRIENDS OF NELSON HAVEN AND TASMAN BAY &
KENEPURU AND CENTRAL SOUNDS RESIDENTS ASSOCIATION**

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QUALIFICATIONS AS AN EXPERT AND SCOPE OF EVIDENCE

1. My name is Michael Lawrence Steven. I am a practising landscape planner and Registered Landscape Architect based in Pohara (Golden Bay).
2. Although this hearing is conducted before an advisory panel appointed by the Minister for Primary Industries, I have prepared my evidence as if for presentation to a hearing of the Environment Court. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note (December 2014). This evidence has been prepared in accordance with it and I agree to comply with it. This evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Qualifications and experience

3. I hold a Doctor of Philosophy in Architecture (Environment-Behaviour Studies) from the Faculty of Architecture, University of Sydney (Australia), a Master of Landscape Architecture by research from the Faculty of the Built Environment, UNSW (Sydney, Australia), a postgraduate Diploma in Landscape Architecture from Lincoln College (University of Canterbury), and a Diploma in Horticulture (Distinction) from Lincoln College.
4. My area of expertise is environment-behaviour studies, particularly environmental perception, and human factors in landscape design, planning and management. My PhD research investigated the dimensions of environmental experience, in particular 'environmental knowing', or the way in which we make sense of the physical environment through our responses to the stimuli we perceive in the environment.
5. I am a member of the NZ Institute of Landscape Architects, the Environmental Design Research Association (EDRA), and the Resource Management Law Association (RMLA).
6. I have more than 25 years of experience in the landscape architecture profession, both in New Zealand and Australia. A large part of my professional career has focused upon landscape assessment theory and

practice. I have taught at tertiary institutions in Australia and New Zealand for 13 years. For the past 10 years I have worked in private practice as a landscape architect and landscape planner in New Zealand. For the last 7 years I have practiced on my own account, specialising in landscape assessment, and landscape and natural character policy analysis. My recent professional work has involved landscape assessments and the presentation of expert evidence to local authority hearings and the Environment Court on landscape issues for a wide range of sites around New Zealand, particularly marine farms and coastal environment policy matters.

7. I have previously given landscape and natural character evidence on marine farming matters in connection with:
 - 7.1. The NZ King Salmon Board of Inquiry (landscape and natural character evidence on proposed farms within the Waitata Reach of Pelorus Sound, and Queen Charlotte Sound),
 - 7.2. *KPF Investments Ltd v Marlborough District Council* [2014] NZEnvC 152,
 - 7.3. *Clearwater Mussels Ltd v Marlborough District Council*, [2016] NZEnvC 21,
 - 7.4. *RJ Davidson Family Trust v Marlborough District Council* [2016] NZEnvC 81, and
 - 7.5. An Application By Pegasus Bay Marine Farm Limited, Ngai Tahu Seafood Resources Limited & Koukourarata Development Company Limited To Extend Marine Farm Crc143394 & Crc143395 Squally Bay, Banks Peninsula (Before The Canterbury Regional Council).
8. I have undertaken a site visit to, and I am familiar with NZ King Salmon farms installed in the Waitata Reach following the decision of the NZKS Board of Inquiry (Waitata and Kopaua).
9. On behalf of Friends of Nelson Haven and Tasman Bay, and the Kenepuru and Central Sounds Residents Association, I have prepared a report on

landscape and natural character issues in support of submissions made by these parties to the proposed Marlborough Environment Plan. An updated copy of this report is attached to this evidence.

10. I have recently been appointed by the NZILA to a peer review panel to assist in the development of best practice guidelines/code of practice for landscape and visual assessment, as part of a project funded and managed by the Ministry for the Environment.

Scope of evidence

11. My evidence is presented on behalf Friends of Nelson Haven and Tasman Bay, and the Kenepuru and Central Sounds Residents Association, who oppose the Ministry of Primary Industries (MPI) proposal for the relocation of salmon farms in its entirety.
12. While the scope of my clients' submissions extends to the proposal in its entirety, my expert evidence relates specifically to the five relocation sites identified within the Waitata Reach of Pelorus Sound. Specifically, these are:
 - Blowhole Point North
 - Blowhole Point South
 - Mid-Channel Waitata
 - Richmond Bay South
 - Horseshoe Bay
13. In supporting my clients' submissions, my evidence addresses the following matters in respect of the proposal as it relates to these five sites, and the Waitata Reach as a whole:
 - 13.1. My opinion that the Waitata Reach of Pelorus Sound has already reached the threshold of unacceptable cumulative adverse effects on landscape and natural character.
 - 13.2. My opinion that the Boffa Miskell Ltd (BML) (2015) landscape study, and Boffa Miskell Ltd (2014) coastal natural character study,

undertaken for Marlborough District Council (MDC) and relied upon by Mr Hudson for the purposes of his own analysis, are unreliable, invalid with respect to key theoretical and methodological principles, and as yet untested through the plan review process that commenced in 2016. The BML (2015) landscape study cannot be relied upon for the purposes of the current proposal, as Mr Hudson has done. As Mr Hudson does not appear to have undertaken his own assessment of landscape/seascape value with reference to NZCPS Policy 15, his opinions on landscape/seascape value are, in my opinion, unreliable.

- 13.3. Similarly, to the extent that Mr Hudson has relied upon the BML (2014) natural character study, rather than undertake his own independent assessment of coastal natural character, his opinions on the natural character of the coastal environment of the Waitata Reach are unreliable.

Data, information, facts and assumptions relied upon to form opinions

14. In preparing this evidence I have drawn upon fieldwork on land and by sea, undertaken in connection with the preparation of expert evidence in connection with other marine farming matters in Pelorus Sound.
15. Having presented evidence to the NZ King Salmon Board of Inquiry (BoI) and before the Environment Court in the matter of *KPF Investments Ltd v Marlborough District Council*, *Clearwater Mussels Ltd v Marlborough District Council*, and *RJ Davidson Family Trust v Marlborough District Council* I have drawn upon my evidence in these matters, and the decisions from these hearings in preparing this evidence. I consider that these decisions provide relevant guidance on evolving understandings of 'landscape' in the context of the Resource Management Act (RMA) and the interpretation of the New Zealand Coastal Policy Statement (2010).
16. I am familiar with the application documentation, and I attended a public drop-in session in Nelson on Wednesday 23 February. To the extent that I agree with material in those reports, in the interests of brevity I refrain from

repeating factual and descriptive information on the proposal and the sites that I agree with.

17. I have reviewed the landscape assessment prepared by Mr Hudson, the peer review of the Hudson report prepared by Ms Julia Williams, and Mr Hudson's response to that peer review.
18. I am familiar with the Boffa Miskell Ltd (2015) *Marlborough Landscape Study*, and the Boffa Miskell Ltd (2014) *Natural Character of the Marlborough Coast*.
19. Other literature or material which I have used or relied upon in support of my opinions is referenced in footnotes.

Outline of my evidence

20. I begin my evidence with comments on the appropriate spatial contexts for the assessment of landscape/seascape significance and the natural character of the coastal environment.
21. I then discuss the landscape significance of the Waitata Reach. I respond to what I regard as flaws in the Hudson assessment, and note relevant decisions of the BoI and the Environment Court. I state my opinions on the landscape significance of the Waitata Reach.
22. Applying a similar analysis, I discuss the natural character of the Waitata Reach.
23. I address the issue of cumulative adverse effects on landscape and natural character and concluded that Waitata Reach is at the threshold of unacceptable cumulative adverse effects.
24. I consider the scope for mitigation and remediation.
25. With regard to New Zealand Coastal Policy Statement (2010) Policies 13 and 15, I conclude that the cumulative adverse effects are significant and as such must be avoided.

26. I consider aspects of the peer review of the Hudson assessment undertaken by Ms Julia Williams of Drakeford Williams Ltd.

THE APPROPRIATE CONTEXTS FOR THE ASSESSMENT OF LANDSCAPE AND SIGNIFICANCE AND NATURAL CHARACTER

27. Some of the differences in opinion between Mr Hudson and me may be explained by what I regard as the inappropriate approach adopted by Mr Hudson to the definition of the spatial contexts within which the proposal is to be considered. I consider Mr Hudson's approach generally to be invalid, and with respect to landscape, unsupported by decisions of the Environment Court.
28. Accordingly, I commence this section with explanatory comments on some of the principles that apply to defining the physical/spatial contexts referred to in NZCPS Policies 13 and 15 (and also the corresponding concepts in RMA s6(a) and s6(b)). I begin with the concept of landscape, as used in s6(b) and NZCPS Policy 15, and then address the concept of natural character.

Definition of landscape

29. A valid, unambiguous operational definition of landscape is required for the purposes of undertaking landscape assessments in response to section 6(b) and NZCPS Policy 15. The IFLA Asia-Pacific Region Landscape Charter, to which the NZILA is a signatory, provides such a definition. It is the same definition adopted by the European Landscape Convention. Landscape is defined as:

An area, as perceived by people, whose character is the cumulative result of the action and interaction of natural and/or cultural factors.

30. For the purpose of delineating the spatial extent of a landscape, the relevant words in the definition are; "...as perceived by people".
31. This definition is consistent with the general understanding of what constitutes a landscape in a RMA section 6(b) sense, as given by the

Environment Court in *KPF Investments Ltd v Marlborough District Council*, at [52]¹:

*We hold that the word “landscape” is being used in section 6(b) primarily in the picturesque sense of **an area that can be seen at a glance** [emphasis added].*

32. This explanation as to the intended meaning of landscape is consistent with the IFLA definition given above, but is consistent also with a range of other accepted definitions, including:

*Landscape is not synonymous with environment, **it is the environment perceived**, especially visually perceived' (Appleton, J. 1980. *Landscape in the Arts and the Sciences*. University of Hull, Yorkshire)*

*Usually a landscape is that portion of land or territory which **the eye can comprehend in a single view**, including all its natural characteristics. (Steiner, F. 1991. *The Living Landscape: An Ecological Approach to Landscape Planning*. McGraw Hill. New York)*

*Landscape is the assemblage of human and natural phenomena contained **within one's field of view** outdoors (Palka, Eugene J. 1995. *Coming to grips with the concept of landscape*. *Landscape Journal*, 14(1))*

[emphasis added in each quote]

33. As is apparent from the words emphasised in the definitions given above, the notion of landscape as a perceived phenomenon is consistent through all these definitions, and the interpretation given by the court in *KPF Investments*.
34. The implication for landscape assessment for section 6(b) and NZCPS Policy 15 purposes is that the starting point is a landscape as perceived or experienced in the field, experienced in an holistic sense.

¹ [2014] NZEnvC 152. For a more complete account of the Court's decision on this matter see Appendix A, What is a 'Landscape'?

35. The landscape approach to assessment (referred to in various decisions of the Environment Court², and the High Court's *Man o'War* decision³) applies the following stages to assessment:
- 35.1. Identify the relevant landscape/s,
 - 35.2. Determine whether a landscape is a natural landscape, and if so, how natural (with reference to a scale of natural character - see next section of my evidence),
 - 35.3. Assess whether any landscape, as a natural landscape, is also outstanding at a regional level.

Scale of analysis

36. Landscapes can be defined at a range of scales, and while there are no hard guidelines as to the sufficient extent of a tract of land to constitute a landscape, it is well established in RMA practice that landscape character areas and landscape 'units' do not constitute a landscape. Thus, there is a scale at which a tract of land is too small to be regarded as a landscape.
37. This principle was established in the first Queenstown landscape decision⁴, where at paragraph 105 the Court determined:

When considering the issue of outstanding natural landscapes we must bear in mind that some hillsides, faces and foregrounds are not in themselves outstanding natural natural features or landscapes, but looked at as a whole together with other features that are, they become part of a whole that is greater than the sum of its parts. To individual landowners who look at their house, pasture, shelterbelts and sheds and cannot believe that their land is an outstanding natural landscape we point out that the land is part [emphasis in original] of an outstanding natural landscape, and questions of the wider context and of scale need to be considered.

² e.g.:

C15/2009, *Friends of Pelorus Estuary Inc. v Marlborough District Council* at [37]
 [2011] NZEnvC 387 *High Country Rosehip Orchards Limited v Mackenzie District Council* at [74] [2012] NZEnvC *Port Gore Marine farms v Marlborough District Council* at [78]

³ CIV-2014-404-002064 [2015] NZHC 767 *Man o'War Station Ltd v Auckland Council*, at [10]

⁴ 2000 NZRMA 59

38. The analysis of landscapes within the Marlborough Sounds is confounded by the highly complex nature of the Marlborough Sounds topography. There is no correct analysis of landscapes, as the Marlborough Sounds overall are open to a multitude of different interpretations, according to the scale of analysis chosen, and individual perceptions. However, it is my opinion that some frames of reference are more valid than others, and there is a scale of analysis at which a tract of land ceases to qualify as a landscape for RMA s6(b) and NZCPS Policy 15 purposes.
39. While at the broadest scale of analysis the Marlborough Sounds overall can be regarded as a landscape in a general sense, the landscape at this scale exceeds that area of land that can be ‘seen at a glance’, or ‘comprehended in a single view’, as the definitions presented above require. For RMA s6(b) and NZCPS Policy 15 purposes it is necessary to analyse landscapes within the Marlborough Sounds at a finer grained levels of analysis.
40. In identifying the appropriate scale of analysis for defining the landscape for the purposes of the matter before the Marlborough Salmon Farm Relocation Advisory Panel (Panel), is relevant to note that it was generally accepted in expert witness caucusing for the NZKS Board of Inquiry (BoI), that the appropriate landscape frame of reference for considering the proposed Pelorus Sound salmon farms was the Waitata Reach. The extent of this area was illustrated in the evidence of Mr Frank Boffa, for NZKS. (see Figure 1, below). This map was also included in the agreed expert witness caucusing statement.
41. The identification of the Waitata Reach as the landscape context was recognised by the BoI, who stated at paragraph [643] of their report:

[643] There was general consensus between the landscape architects that the location and general character of the Reach needs to be appreciated in the context of the overall labyrinth of waterways known as Pelorus Sound. There was little or no disagreement as to its setting. The Waitata Reach incorporates the body of water that connects Tawhitinui Reach at Maud Island to the south, to the open waters of Cook Strait to the north. The Reach is approximately 12km long and the width of the passage typically varies between 2km and 4km.

42. The Waitata Reach, as identified in paragraph [643] of the decision, was the context applied in considering the effects of the proposed farms - individually and cumulatively - on natural character, landscape and visual amenity values.
43. At a finer grain of analysis, individual bays off the Waitata Reach - such as Port Ligar, Waihinu Bay, Waitata Bay and Forsyth Bay - may also be regarded as landscapes. However, I consider this level of analysis to be the lower limit of the scale at which a Marlborough Sounds landscape/seascape may be identified for RMA and NZCPS purposes. I do not regard the scale of the individual bay as the appropriate scale for considering the current matter.

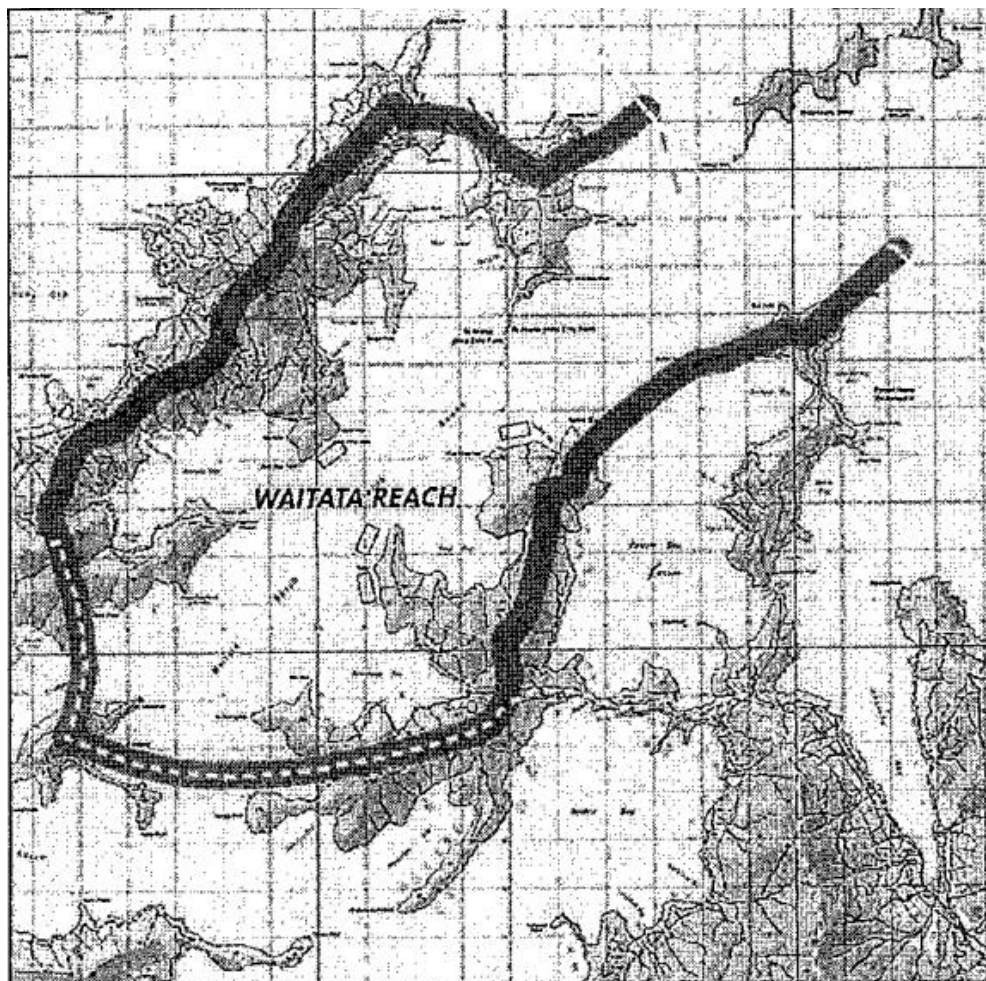


Figure 1: Part of map agreed in NZKS landscape and natural character expert witness caucusing identifying the relevant landscape for the consideration of the proposed Waitata Reach salmon farms.

44. At an even finer grain of analysis, the scale of the site (meaning individual salmon farm sites, in this context), as adopted by Mr Hudson for the purposes of his assessment, is not a legitimate spatial frame of reference for considering the current matter with respect to RMA s6(b) and NZCPS Policy 15. I discuss this further later in my evidence.

NZCPS Policy 15: Landscape includes seascape

45. The definition of landscapes in the Marlborough Sounds is confounded by the role of the sea. The sea, or at least the surface of the marine environment, is unambiguously an integral part of all Marlborough Sounds landscapes, at any scale of analysis. I consider this analysis to be consistent with NZCPS Policy 15, which refers to; “...natural features and natural landscapes (*including seascapes*) [emphasis added] of the coastal environment”.
46. However, unlike the terrestrial environment, which compartmentalises on the basis of topography (e.g., hydrological catchments), there is a continuity to the sea, an absence of bounding features, that links areas together and helps create a perceptual continuum. I do not regard any landscape within the Sounds as being wholly terrestrial - all areas that are capable of being defined as a landscape include a terrestrial and marine component. As such they are more correctly regarded as landscape/seascapes. As this analysis applies to the Waitata Reach (see Figure 1), the surface of the waters of the reach and the enclosing, defining landmass together constitute the landscape/seascape for NZCPS Policy 15 purposes.
47. The intricate and at times confusing complexity of the land/sea interface is a significant aspect in terms of defining the character and aesthetic quality of the Sounds generally, and the Waitata Reach. Indeed, it could be regarded as one of the defining characteristics of the Sounds. The land/sea interface is the most sensitive area of each landscape, and the area most likely to be compromised in terms of natural character and aesthetic quality as a consequence of marine farming.

Landscapes and Features

48. The NZCPS Policy 15 provides for the protection of both outstanding natural features (Policy 15(a)) and natural features (Policy 15(b)). Features are distinguished from landscapes largely on the basis of homogeneous geomorphological characteristics. Features are discrete physical elements in the landscape, generally well bounded or defined, and the product of the interaction of geological and geomorphological processes. Features exist as a matter of scientific fact, and their definition is not subject to differing perceptual interpretations. Landscapes, by comparison, may be regarded as extensive, heterogeneous tracts of land subject to often widely differing personal interpretation, according to perceptions.
49. The Boffa Miskell landscape study upon which Mr Hudson relies for his analysis of landscape value, fundamentally confuses the two distinct concepts of feature and landscape. I have addressed this issue in a report prepared to accompany my clients' submissions on the proposed Marlborough Environment Plan (see Attachment to this evidence).
50. In the interests of clarity, my own representation of Figure 1, the Waitata Reach landscape/seascape, is presented below as Figure 2. The landscape/seascape as defined in Figure 2 is the appropriate scale and extent of landscape at which to consider the current matter, in my opinion. My Figure 2 is a composite of several graphics showing: (1) the extent of existing marine farm development in the Waitata Reach including existing NZKS farms, (2) the proposed position of the 5 salmon farms identified for relocation to the Waitata Reach, and (3) the spatial extent of the Waitata Reach landscape/seascape. The Marlborough District Council base map also illustrates the coastal marine zones for the Waitata Reach: the pale blue areas are CMZ1, while the lavender areas are CMZ2.

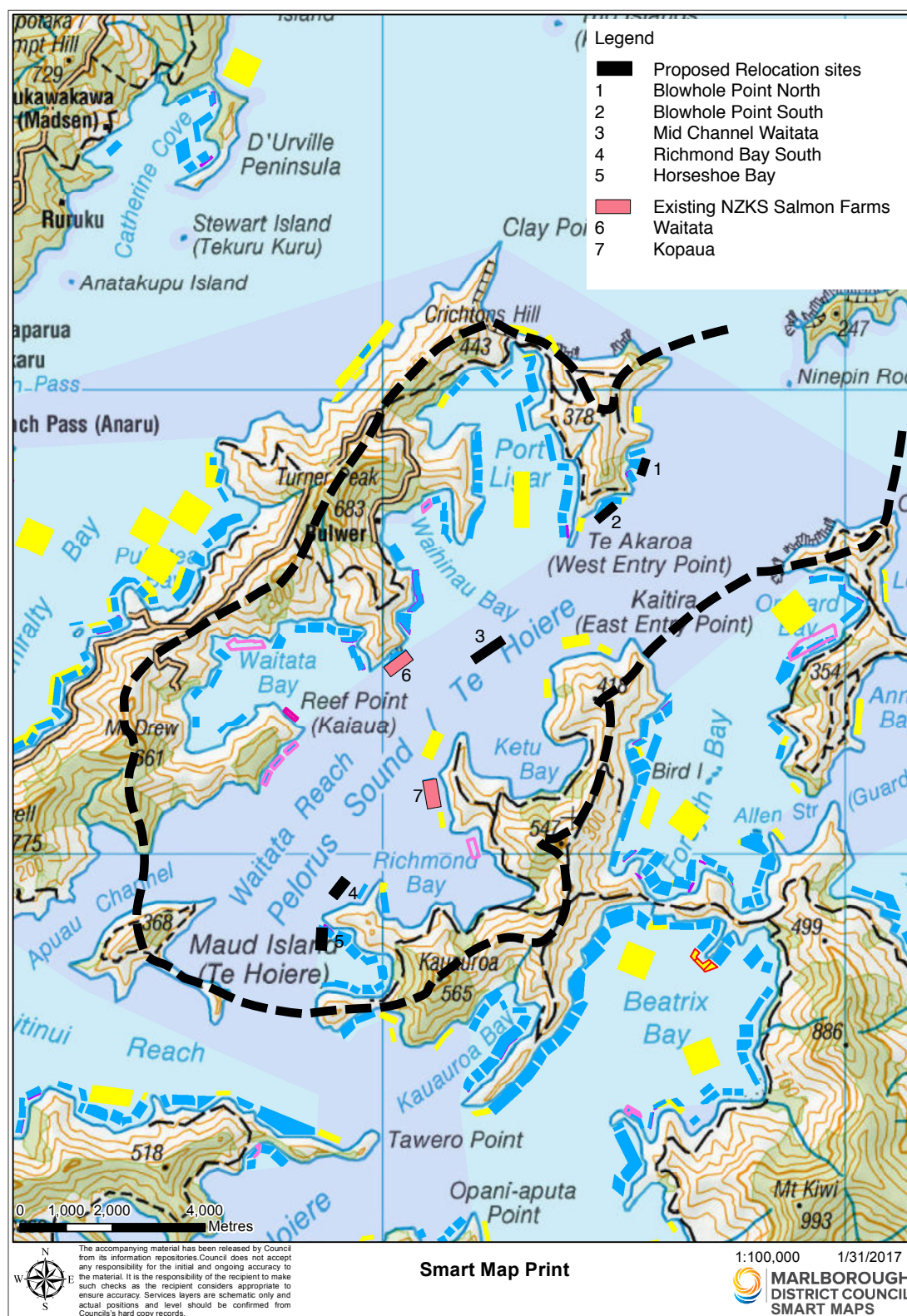


Figure 2: Waitata Reach landscape, as identified on Figure 1 (dashed black line), showing: (1) the extent of existing marine farm development in the Waitata Reach including existing NZKS farms, (2) the proposed position of the 5 salmon farms identified for relocation to the Waitata Reach, and (3) the spatial extent of the Waitata Reach landscape/seascape. The Marlborough District Council base map also illustrates the coastal marine zones for the Waitata Reach: the lavender areas (e.g., Waitata Reach) are CMZ1, while the pale blue areas are CMZ2.

The Coastal Environment

51. Turning from landscape assessment and evaluation to natural character assessments undertaken for the purposes of NZCPS Policy 13; such assessments are undertaken with reference to the coastal environment, not landscapes:

To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:

52. The coastal environment is not synonymous with the concept of landscape or landscapes/seascapes, as defined for the purposes of Policy 15 assessments. Landscape/seascapes are not the correct spatial frame of reference for Policy 13 assessments.
53. While the same holistic overview is applied to natural character assessment as to landscape assessment, NZCPS Policy 13 introduces the requirement to consider factors not normally relevant to landscape assessment.
- 53.1. Assessments of the natural character of the coastal environment must factor in consideration of natural character status of the the water column and seabed⁵, whereas a landscape/seascape assessment is confined to the foreshore, inter-tidal zone and the surface of coastal waters that might constitute the seascape.
- 53.2. Coastal processes, including the natural movement of water and sediment, or changes to tidal flows and currents, and the natural sediment state, are to be considered in natural character assessments.
- 53.3. Natural character assessment considers an objective state, or condition, rather than a quality or value⁶, and to that extent, natural character exists regardless of individual experiential constructions, unsupported by objective observation. Experiential responses of an

⁵ In principle, throughout the coastal marine area (CMA), extending to 12 nm off-shore. In practice, the natural character of the CMA need only be considered within the spatial context that might reasonably be impacted by the proposal under consideration.

⁶ The value of the preservation of the natural character of the coastal environment is given by RMA s6(a), as being a matter of national importance.

aesthetic nature, while relevant to the assessments of landscapes and features, are not relevant to the assessment of natural character.

54. The scale and complexity of the coastal environment calls for a different analytical approach than that which may be applied to landscapes and features. A framework for the assessment of natural character at a range of scales (level 1 - Level 5) is presented in the BML (2014) study. I generally endorse this approach, and to the extent that it has been applied correctly in the Hudson assessment to natural character, it is relevant.
55. However, Hudson mistakenly attributes this approach to the Boffa Miskell Ltd (2015) landscape study (see, the section *Context and Assessment Across the Scales*, p.5, Hudson report). The analysis of natural character according to 5 scales (Level 1- level 5) was not applied to the assessment of Marlborough Sounds landscapes (or Marlborough landscapes generally), as claimed by Hudson. As I have stated above, the appropriate scale for the evaluation of landscapes and the assessment of landscape effects is the landscape/seascape of the Waitata Reach.

THE LANDSCAPE SIGNIFICANCE OF THE WAITATA REACH

The current status of landscape significance within the Waitata Reach

56. Landscape significance within the Waitata Reach is currently determined by the landscape provisions of the Marlborough Sounds Resource Management Plan (MSRMP). The assessments⁷ that informed the MSRMP landscape provisions pre-date the RMA and the conventions of outstanding natural landscapes (ONL) and outstanding natural features (ONF). The terminology applied in the MSRMP is *Areas of Outstanding Landscape Value* (AOLV). Such areas were identified according to a narrower interpretation of

⁷ Department of Conservation 'Marlborough Sounds Draft Landscape Assessment: Selected Sites' Earl H. Bennett, Landscape Architect, July 1989.

Department of Conservation (Nelson) 'Marlborough Sounds Visual Impacts of Coastal Development - Selected Locations' Earl H. Bennett, FNZILA, Landscape Architect, June 1990 (principal report and appendices).

Department of Conservation (Nelson/Marlborough Conservancy)'Draft Regional Landscape Assessment' Sissons and Conway Ltd, June 1993 (a draft unpublished report).

landscape significance than is required by RMA s6(b), and they are not synonymous with either ONL or ONF.

57. At paragraph [46] of its decision in *KPF Investments*, the Environment Court explained the distinction between AOLV and ONL:

The district plan has not identified particular landscapes as outstanding, rather it has gone beyond that and identified the “areas of outstanding landscape value” to guide people dealing with the landscape as to where development might be more or less appropriate.

58. Areas of land in the vicinity of the Waitata Reach identified as AOLV are illustrated in the map reproduced in Appendix C.
59. As a consequence of the Environment Court’s decision in *KPF Investments Ltd v Marlborough District Council*, the prominent headland identified on topographical maps at the western entrance to Ligar Bay, between Cannon Point and Danger Point, may now be regarded as an ONF within the meaning of section 6(b) and NZCPS Policy 15.
60. An updated assessment of landscape significance within the Marlborough district has been undertaken by Boffa Miskell Ltd (2015) for the purposes of the proposed Marlborough Environment Plan. I have reproduced the relevant sections of the BML maps of ONFL in the vicinity of the Waitata Reach at Appendix D and the consequent MDC proposals for the identification of landscape significance (ONFL and High Amenity Landscapes (HAL)) in the proposed MEP at Appendix E.
61. I am critical of many aspects of the BML assessment, and some of my concerns are discussed in the document prepared in support of my clients’ submissions on the proposed MEP, attached to this evidence. Two issues in particular have a bearing on the current matter:
- 61.1. The BML (2015) study is based on a flawed, invalid distinction between features, and landscapes/seascapes as they should be understood in the context of the Marlborough Sounds.

- 61.2. The BML (2015) study has failed to understand landscape and seascape as an integral unity within any part of the Sounds. The identification of outstanding areas is overwhelmingly biased towards terrestrial environments.
62. In consideration of these issues, the statement at page 106 of the BML (2015) study: “*Within the Inner Sounds Landscape Unit there are no identified Outstanding Natural Landscapes, principally due to the small scale of this character unit*”, is neither credible nor methodologically valid.
63. The assessment is based in an invalid conceptual distinction between landscapes/seascapes and features. The Marlborough Sounds has been assessed as a collection of features, and features, by definition, do not include adjacent seascapes. This conceptual error has the effect of excluding seascapes from almost all Marlborough Sounds ONFL, other than the Outer Sounds ONL and Tennyson Inlet/North Nydia Bay. For example, with reference to the sections of maps reproduced at my Appendix D, if the Port Ligar area were to be defined as a landscape/seascape, rather than a feature, there would be no theoretical nor methodological basis for excluding the waters of Port Ligar from identification as outstanding, given the outstanding classification of the entire enclosing land mass. With the exception of Tennyson Inlet and North Nydia Bay (mis-named) ONFs, the failure to attribute outstandingness to any area of seascape within the Marlborough Sounds is not credible, in my opinion. This outcome derives from the failure of the BML (2015) to establish a valid distinction between features and landscapes/seascape.
64. To regard the Sounds as a collection of mainly terrestrial features, precludes the identification of seascapes as outstanding. Within any part of the Marlborough Sounds, landscape and seascape are an integral perceptual unity - any landscape necessarily includes the adjacent seascape. This was recognised in the BoI final decision, where at paragraph [606] the Board affirmed my opinion that the sea was an integral part of Sounds landscapes:

We also consider that it is important in the Sounds setting to consider, as Dr Steven emphasised, the role of the sea, or at least the surface of the marine environment. It is unambiguously an integral part of all Marlborough Sounds landscapes at any scale of analysis.

65. On the basis of these comments, I regard the BML (2015) study of landscape significance to be an invalid and unreliable source for the purposes of Mr Hudson's assessment. The BML (2015) study, and the landscape provisions of the proposed MEP that derive from it, are as yet untested through the process of public hearings and Environment Court decisions.

The Hudson assessment of landscape significance

66. Mr Hudson appears to have adopted - uncritically, and without any apparent additional analysis of his own - the findings of the BML landscape and natural characters studies, as providing the basis for his own work. Thus, to the extent that the Boffa Miskell studies are significantly flawed, these flaws carry through into Mr Hudson's own assessment, and the consequent validity and reliability of his work pertaining to the relocation of 6 NZKS salmon farms.
67. To this issue, my evidence addresses an aspect of Mr Hudson's own assessment that, in my opinion, further diminishes the validity and reliability of his work. At page 5 of his report, Mr Hudson states:

*This study is concerned for the main part with **assessment at the localised site scale**. Values identified for an area or feature at a district-scale or Level 3/4 scale will often be more general than those identified for a specific site, and at the site-scale not all high-level/wider context values might apply.*
[emphasis added]

68. Mr Hudson's focus on assessment at the localised site scale is, with limited exceptions, an invalid approach, and is contrary to principles established in many decisions of the Environment Court, and the NZKS BoI decision. I shall discuss this issue with reference to two sites.
69. With regard to the landscape significance of Proposed Site 34, Blowhole Point North, Mr Hudson states (p.20):

Conclusion: Proposed Site 34 Landscape Assessment

...

The site is part of the wider Sounds, which is an Outstanding Natural Landscape at the National Scale. It also lies inside an area proposed as ONL (Proposed MEP, but not in Operative MSRMP) at the district scale, and is within a feature proposed as an ONF in the MEP (but not in Operative MSRMP) at the district scale (the waters between Te Akaroa and Kaitira Headland)¹⁸.

The conclusion drawn from this assessment is that this particular bay and its adjacent hill-slopes, when assessed at the site scale (Level 4/5), do not meet the threshold for ONF. This is due to reduced natural science and reduced perceptual/sensory values (including visual amenity), at the site-scale. Associative values in relation to the site's role within the Pelorus gateway are also reduced at the site-scale due to the expansiveness of the gateway. In addition, this assessment considers that terrestrial and marine components should be considered as one for the purpose of ONFL assessment. These factors, along with the degree of modification to land cover (pasture and pine plantation) and the coastal margin (with existing mussel farms and benthic modifications) at this site prevents the site from appropriate qualification as Outstanding at the site scale.

Landscape Baseline Rating: High-Moderate

70. With regard to Proposed Site 122, Blowhole Point South, Mr Hudson states:

Conclusion: Site 122 Landscape Assessment

There is a sense of remoteness and expansiveness at the site, due to the location on the edge of the open sea. Perceived naturalness, coherence and visual amenity is reduced by the presence of a block of exotic forestry, with geometric boundary edges at odds with the landform. The site has high memorability due to associative values relating to its location, and also due to an adjacent unusual landform. Natural science values are reduced by the modified coastal margin and modified vegetative land-cover, but the presence of regenerating native vegetation contributes to a slightly higher rating than the nearby site 34.

Landscape Baseline Rating: High-Moderate

71. At both locations, Mr Hudson rates the landscape significance of the sites as High-Moderate (despite stating that Site 122 has; "...a slightly higher rating than nearby site 34").

72. There is no such concept in resource management practice as ‘Outstanding at the site scale’. This was established by a decision of the Environment Court as long ago as the first Queenstown landscape decision in 1999 (see reference at my paragraph 37). The appropriate spatial context for analysis with respect to NZCPS Policy 15 is either a feature, or a landscape/seascape, and the Blowhole Point sites do not qualify as either.
73. In my opinion it is valid to regard the entire headland on the eastern side of Port Ligar as a feature. By definition, this feature cannot include adjacent waters, for these are part of a landscape/seascape, but one that also includes the adjacent headland. Their spatial context properly defined, the Blowhole Point North and Blowhole Point South sites may be regarded as part of two outstanding natural landscape/seascapes:
- 73.1. At a coarse grained level of analysis, they can be regarded as being within the Outer Sounds ONL, as defined in the BML (2015) study,
 - 73.2. At a finer grain of analysis, they may be regarded as being within the Port Ligar, Forsyth Island and Kaitira Headland (mis-named) ONF, as defined in the BML (2015) study and recognised in the proposed MEP.
74. However, the Port Ligar, Forsyth Island and Kaitira Headland ONF is more correctly defined as an ONL (it is part of a landscape/seascape, and not a feature in NZCPS Policy 15 terms), and indeed an ONL that should extend to cover a much greater area than that identified in the BML (2015) study. I address this in the next section of my evidence.
75. I acknowledge that the landscape/seascape within which these sites are located has no formal status as an Area of Outstanding Landscape Value in the MSRMP. However, I note that the concept of AOLV is predominantly applied to the terrestrial environments. The means by which AOLV were assessed predates the RMA and current methods of landscape assessment based on the Pigeon Bay factors.

My assessment of landscape significance

76. As noted elsewhere in my evidence, I consider the appropriate spatial context for the consideration of this matter is the Waitata Reach, extending from Maud Island to the Chetwode Islands. I also include adjacent bays in the definition of this area. As defined, I consider the Waitata Reach the appropriate context for each of the following aspects of resource management:

76.1. It is an appropriately scaled part of the coastal environment within which to consider levels of natural character with reference to NZCPS Policy 13⁸. Waitata Reach corresponds to Level 3, as applied to the analysis of the natural character of terrestrial areas of the coastal environment in the BML (2014) natural character study. More detailed, finer grained analysis at Levels 4 & 5 is also appropriate, down to the scale of an individual bay. In the context of the Waitata Reach, I regard Port Ligar as Level 4, and, say Horseshoe Bay and the locality of Blowhole Point (but not the individual proposed sites) as Level 5.

76.2. It is the appropriate landscape/seascape context for the purposes of identifying significance (outstandingness) with reference to NZCPS Policy 15.

76.3. It is the appropriate context in which to consider adverse effects of development on landscape significance and natural character. This is particularly the case with respect to cumulative adverse effects.

77. In evidence before the NZKS BoI, I stated my opinion that the Waitata Reach is an outstanding natural landscape (ONL). In the context I used the term ONL, I was referring to landscape and adjacent seascape as an integral, inseparable entity. As such, I consider this landscape/seascape to be subject to NZCPS Policy 15a:

⁸ I have noted elsewhere in my evidence that landscape and the coastal environment are not synonymous concepts. However, in the circumstances of the Marlborough Sounds, where the entire Marlborough Sounds is accepted as being within the coastal environment for the purposes of the NZCPS, there will be many areas where a landscape, defined for the purposes of Policy 15, is substantially the same as the coastal environment, defined for the purposes of Policy 13.

(a) avoid adverse effects of activities on outstanding natural features and outstanding natural landscapes in the coastal environment;

78. This opinion was re-stated in *Pelorus Wildlife Sanctuaries Ltd v Marlborough District Council*. Following an extensive analysis of the Waitata Reach according to natural science, aesthetic and social/community held values, I concluded at paragraphs 101 of my evidence:

Conclusion on landscape significance

On the basis of the aesthetic, natural science and sense of place values attributable to the Waitata Reach/Port Ligar landscape, I am unequivocal in regarding the area as an outstanding natural landscape. In reaching this conclusion I make no differentiation between the terrestrial and marine environments. Particularly insofar as aesthetic value is concerned, the marine and terrestrial environments are an integral and inseparable unity.

79. In my opinion, sensory qualities, or more accurately aesthetic value constitutes the primary basis for the recognition of the Waitata Reach, and the Marlborough Sounds generally, as having significant value - in my opinion at the level of outstanding. The aspects of aesthetic appreciation and aesthetic value that I have drawn upon include:

- 79.1. Factors identified in the MSRMP (section 5.1.1, p.5-1):

- *The curving coastline with a range of tidal estuaries and sandy and rocky beaches;*
- *Island landforms set with a skyline backdrop;*
- *Highly weathered coastal cliffs;*
- *Rolling ridgelines along the skyline;*
- *A complex mosaic of vegetation patterns which gives rise to a range of textures and colours in the landscape; and*
- *Uninterrupted sequence from hilltop to seafloor.*

- 79.2. The grand scale, labyrinthine waterways and “tortuous paths” recorded by Jerunningham Wakefield⁹. These, to my mind are the defining characteristics of the Sounds landscapes - the complex interplay of land and water, and the sense that around every headland there is more to be revealed and discovered makes the Sounds New

⁹Edward Jerunningham Wakefield, *Adventure in New Zealand*, abridged edition by Joan Stevens. Auckland, Golden Press, 1975, cited in Ponder, Frank 1986. *A labyrinth of waterways: the forgotten story of New Zealand's Marlborough Sounds*. Wenlock House.

Zealand's most accessible, yet intriguing landscape. The fact of the landscape being dominated by water creates a situation of unrestricted access to explore and experience the complexity of the Sounds and the almost infinite range of vistas and views available. This aspect is clearly evident in the Waitata Reach.

- 79.3. The landforms, vegetative cover and water surface of the Reach can be appreciated in the more abstract sense of forms, lines, textures, patterns and colours. This is the approach adopted in the Department of Conservation's VAMPLAN study (1989) which was the basis for the identification of Areas of Outstanding Landscape Value in the MSRMP. It is an analytical and less intuitive approach to aesthetic appreciation but one that may still reward with considerable aesthetic pleasure. Landforms and topography are the principle basis of formal appreciation, but the textures and patterns of bush and pasture are also pleasing and highly valued.
- 79.4. Aesthetic appreciation and aesthetic value also derives from the perception of the natural character of the biophysical aspects of the landscape. The intrusion of structural elements, particularly those of an incongruous nature, into a landscape otherwise perceived as highly natural, diminishes the aesthetic appreciation of natural environments.
- 79.5. The land sea interface is particularly intriguing, as an opportunity to experience the effects of coastal erosion of landforms, the weathering of exposed rock, and the various plants and life-forms that colonise shallow waters, the intertidal zones, and coastal cliffs.
- 79.6. The natural history of the Sounds is a source of considerable aesthetic pleasure. Seabirds - particularly those that flock together to scavenge or dive for fish, provide an endless source of wonder and pleasure. The prospect of seeing marine mammals, such as dolphins and fur seals is always present. Seals loafing in haul out areas around the shoreline are particularly accessible for viewing from the sea, and add to the

pleasure associated with cruising the coastal margins of the Sounds. Seals and dolphins are also encountered in deeper waters, where sometimes seals can be observed feeding upon a catch of octopus or other fish.

- 79.7. Other sensory experiences contribute also: the smells associated with the bush, shoreline and water; the sounds of water lapping the shoreline or waves breaking; the varying atmospheric conditions, and patterns on the water caused by sun, shadow and the sudden, swirling, erratic winds (williwaws) that characterise the Sounds.
80. Collectively these aspects, and no doubt many others, such as a sense of remoteness and wildness, according to the characteristics of individual aesthetic experiences, combine to provide a rich range of experiences for aesthetic appreciation that I regard as highly valued and widely shared among all who have experienced the Sounds.
81. That the Waitata Reach is an outstanding natural landscape/seascape remains my opinion, notwithstanding the development of two further salmon farms within the reach (Waitata and Kopaua) as a consequence of the NZKS BoI decision. However, as I shall state in a later section of this evidence I consider that with the addition of these two salmon farms, the Waitata Reach to be developed to the point of the threshold for unacceptable cumulative adverse effects on natural character and landscape significance.
82. Parts of the area I have defined as the Waitata Reach landscape/seascape are identified in the proposed MEP as an outstanding natural landscape and an outstanding natural feature (Appendix G). I agree with the outstanding status identified in the MEP for the area of proposed sites 34 and 122. However, I take issue with the terminology applied to its identification (ONF, as distinct from ONL). These areas are limited in their extent largely due to flawed and invalid distinctions between the concepts of landscape/seascape and feature.

83. In my opinion, each of the 5 proposed sites located in the Waitata Reach may be regarded as being within an outstanding landscape/seascape within the meaning of NZCPS Policy 15.
84. I accept that the status of landscape/seascapes within the locality of the Waitata Reach will not be finalised until such time as hearings, and subsequent appeals on the proposed MEP are resolved. Until then, I accept that the areas identified in the proposed MEP must stand as the only regional classification of the outstanding landscape/seascapes and features of Marlborough - notwithstanding the invalid and unreliable aspects of the assessment that identified such areas.
85. Irrespective of the outstandingness (or otherwise) of the Waitata Reach landscape/seascape, it is an area that is in my opinion, a *natural* landscape/seascape, and as such is subject to Policy 15(b) of the NZCPS:
- (b) avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment;*
86. I regard the failure to reference explicitly, Policy 15(b) of the NZCPS as a significant omission in the Hudson assessment report. I discuss the basis for regarding the Waitata Reach as a natural landscape/seascape in the next section of my evidence. I then address the issue of cumulative effects for the purpose of establishing that the proposed relocation of 5 salmon farms to the Waitata Reach would constitute a significant adverse effect within the meaning of of NZCPS 15(b), and as such, these significant adverse effects must be avoided.

THE NATURAL CHARACTER OF THE WAITATA REACH

Natural character and its assessment

87. The following paragraphs present key concepts relating to natural character and its assessment. For a further discussion refer to my Appendix B.

88. The concept of the natural character of the coastal environment and the means by which it is to be assessed for resource management purposes is a vexed issue. For the purposes of valid and reliable assessments, much rests upon a valid definition of the core concept - natural character. A valid definition that I propose, and an approach to its assessment and rating, is presented in Appendix B to this evidence. For convenience, I repeat my definition and my 7-range scale of natural character below:

Definition

Natural character is the expression of natural elements, natural patterns and natural processes in the landscape or coastal environment, rated according to the perceived degree of modification through human agency¹⁰

VERY HIGH	HIGH	MODERATE-HIGH	MODERATE	MODERATE-LOW	LOW	VERY LOW
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Figure 3: A scale of natural character: 7-range scale of natural character for the assessment of the degree of natural character exhibited by a landscape/seascape or the coastal environment. The shaded part of the scale is the range within which natural processes become dominant over cultural processes. Landscape/seascapes assessed as being within the Moderate range of the scale will generally display natural and cultural influences in equal measure. A landscape/seascape or feature rating Moderate-High, High or Very High may be regarded as a natural landscape/seascape or natural feature within the meaning of NZCPS Policy 15(b)

89. The developing practice in the assessment of the natural character of the coastal environment is to rate levels of natural character separately for each of the terrestrial and the marine components of the coastal environment. This was the approach adopted in the BML (2014) Marlborough coastal natural character study, and it is an approach I endorse. Given the very different land-use and management circumstances, and differing biophysical conditions that generally prevail within terrestrial and marine components of the coastal environment, I regard it as methodologically unreliable (and probably impossible) to rate the natural character of the coastal environment with a single rating of natural character. The use of a single rating of natural character implies that the natural character of the coastal environment can be

¹⁰ 'modification' or 'intervention' could be used as an alternative to 'agency'.

expressed in terms of averages. Such an approach is methodologically unsound and does not give effect to NZCPS Policy 13, in my opinion.

90. In the interests of clarity, it is a matter of fact that the entire area of the Waitata Reach identified as a landscape in my Figure 2, is also within the coastal environment, i.e., no part of the Waitata Reach may be regarded as beyond the scope of NZCPS Policy 13.

The BML (2014) and Hudson assessments of natural character

91. The BML (2014) natural character report is particularly difficult to interpret, in my opinion. Different spatial contexts are applied to assessing the natural character of the coastal marine component and the terrestrial component of the coastal environment. Coastal Marine Area C is the entire Pelorus Sound from Havelock estuary to Cook Strait, while the corresponding tract of the coastal terrestrial area is defined as Coastal Terrestrial Area 3 Bulwer, which covers only the outer Pelorus Sound, but extends to the terrestrial environment adjacent to Admiralty Bay and French Pass.
92. In addition to different spatial contexts for the assessment of marine and terrestrial components, the assessment rates natural character at a range of scales.
93. To the extent that any coherent understanding of the natural character of the coastal environment of Waitata Reach is possible, it is represented somewhat coarsely and imprecisely in Map 10 (Specific Coastal Natural Character Values of the Marlborough Sounds (levels 4 & 5) of Section D of the BML (2014) study. There is insufficient clarity in this map to warrant its reproduction in this evidence.
94. However, I note that the BML (2014) study gives an overall rating of Moderate-High to the coastal marine area of Pelorus Sound, with specific parts of the coastal marine area (Pelorus Heads and Maud Island) rating High. Somewhat perversely in my opinion, while rating the Maud Island coastal marine area as High, the Boffa Miskell (2014) report also rates the

Maud Island area as also having outstanding natural character¹¹. At the north-east end of the Reach, the Boffa Miskell (2014) report also identifies the Chetwode Islands and the waters around them as an area of outstanding natural character.

95. Mr Hudson in his report, appears not to give a specific account of his assessment of the natural character of the Waitata Reach as a whole, other than to state at page 7;

[t]he reach appears as highly natural and feels remote, due to the expansive scale and largely unmodified landform, the large areas of regenerating native vegetation and the sparsely scattered structures.

96. In the context in which the words “appears as highly natural” appear, it may not be correct to take this as Mr Hudson’s formal rating of the natural character of the Waitata Reach, according to a 7-range scale. However, on the basis of this comment it appears that Mr Hudson may also be of the view that the Waitata Reach can be regarded as a natural landscape/seascape for NZCPS Policy 15 purposes, although he does not explicitly address this matter.
97. Rather than deal with the natural character of the Reach as a whole, the approach to the assessment of natural character adopted by Mr Hudson is to address natural character at the level of the site - what he refers to as the level 4/5 scale applied in the BML (2014) natural character study. This is an incorrect interpretation of the Boffa Miskell approach, as I shall discuss. Further, every conclusion on the baseline level of natural character for each proposed relocation site is prefaced by the words; *Note: This study considers marine and terrestrial environments together for the assessment of natural character baseline*. In my opinion, this approach displays a flawed understanding of methods for the assessment of natural character and the effects of the proposal on natural character.

¹¹ The proposition that an area of High natural character can also be regarded as Outstanding natural character (ONC) derives from the BML (2014) definition of ONC. This is a definition that, to the best of my knowledge, has yet to be endorsed by the Environment Court. An alternative understanding of ONC would place it on the 7-range scale, at the upper end of the Very High range of natural character (see Figure 2, my Appendix B).

98. The first flaw in Mr Hudson's approach relates to his adoption of what he refers to as the Level 4/5 scale of analysis for assessing natural character.
99. The levels of analysis applied in the Boffa Miskell (2014) study - 1 through to 5 - apply to the terrestrial land systems analytical technique, described in the BML (2014, pp 15-18) study. Thus, they are relevant only to the *terrestrial* part of the assessment of natural character - in this case the Bulwer coastal terrestrial area. There is no theoretical or practical basis for assessing the coastal marine area (CMA) according to the same scales of analysis. The land systems approach is premised on the differentiation of tracts of land according to topography, and this approach has no relevance within the CMA. This is one of the reasons why terrestrial and marine areas are assessed separately.
100. Mr Hudson's approach may be explained by the approach and terminology adopted in the BML (2014) study, that (erroneously, in my opinion) applies the terrestrial land systems approach to the Coastal Marine Area - but without explaining the rationale for doing so. Level 3, as proposed in the BML (2014, pp.72-3) study is the entire Pelorus Sound, while relevant examples of Level 4/5 includes the area identified as Pelorus Heads.
101. Adopting the hierarchy of scales proposed in BML (2014), I consider the extent of Waitata Reach as a whole to be appropriate to a Level 3 scale of analysis. I consider Port Ligar (for example) as appropriate to a Level 4 analysis, and, say Horseshoe Bay and the locality of Blowhole Point as appropriate to a Level 5 analysis.
102. In analysing the effects of the proposal on natural character, Mr Hudson makes frequent reference to Level 4/5 being the "site scale". I do not accept that a Level 4/5 analysis can be regarded as being at the scale of the site. The BML (2014) study gives the Pelorus Heads as an example of a Level 4/5 scale of analysis, while I suggest Port Ligar would be an example of a Level 4 scale of analysis, and Horseshoe Bay and example of a Level 5 scale. Mr Hudson's 'site scale' is, in fact, off the scale proposed by BML (2014) and were it to be

given an order I, would regard the site scale as being appropriately regarded as Level 6.

103. The site scale of analysis as applied by Mr Hudson is in fact poorly defined, but as the two proposed locations in the vicinity of Blowhole Point are regarded by Mr Hudson as separate sites, it appears that Mr Hudson's analysis of effects extends no further than the physical limits of individual salmon farms, and in particular the sea surface occupied by each farm. Micro-scale analysis taken to this level is inconsistent with established practice for the assessment of effects on landscapes. While some aspects of effects on natural character are relevant at the scale of the site (e.g., benthic effects), they are only a small part of a larger context that must be considered.
104. As already noted, all such references to Levels 1 - 5 refer to terrestrial environments only, relating as they do to the terrestrial land systems approach¹² to the analysis of the land:

The Land Systems approach involves a systematic analysis of abiotic and biotic (living) characteristics in terms of their spatial configuration, processes and present condition. The geomorphologic characteristics of the region's complex landscapes are used to distinguish physiographic landform units (landtypes), and are based on a range of data sources including published scientific papers, geological and topographical maps, joint earth science inventories and expert scientific knowledge. [BML 2014, p.15]

105. How this system of analysis might be applied to the categorisation and analysis of components of the coastal marine area has not been explained, either in the BML (2014) study or the Hudson report.
106. More appropriately, for the purposes of the current matter, I consider all 5 proposed relocation sites are within the same area of the coastal marine environment - the Waitata Reach - and not, as Mr Hudson suggests, within 5 discrete areas, each capable of independent assessment at the scale of the site.

¹² Lynn, I.H (2009) Land Types of the Marlborough Region. Landcare Research New Zealand.

107. The micro scale of analysis adopted by Mr Hudson enables unrepresentative assessments of natural character to be undertaken. Both Blowhole Point North and Blowhole Point South sites are within the same Level 4/5 Sub-area of the Pelorus Sound Coastal Marine Area (BML, 2014). This is an area rated by the Boffa Miskell study as having High natural character. However, Hudson, in applying a micro level of assessment that goes to a finer grain of analysis than Boffa Miskell's Level 4/5, assesses the sites as having only Moderate natural character. The appropriate scale for the assessment of natural character is the coastal environment context of the proposed sites, not the footprint of individual sites.
108. The second flaw in Mr Hudson's approach is his practice of combining terrestrial and marine natural character assessment given for each site, into a single rating of natural character. This is not regarded as best practice, and is methodologically difficult, if not an impossible task, in my opinion. Certainly Mr Hudson does not explain how he achieves his combined rankings. The practice of combining terrestrial and marine ratings into a single rating of natural character ignores the complexity of each context, and the probability that each context may rate significantly different to the other. The outcome is likely to be a meaningless 'average' rating that distorts the actual state of natural character when each context is considered separately.
109. It is my opinion that, with the exception of areas of outstanding natural character, as defined in the BML (2014) study¹³, marine farms have no effect on the natural character of adjacent terrestrial environments. No areas of outstanding natural character are directly impacted by the proposal. Each relocation site is located wholly within the marine environment and effects only the marine environment. In assessing the effects of the proposed marine farms on a combined terrestrial/marine unit of analysis, the outcome will necessarily be biased by the inclusion of the terrestrial environment, which will not be affected in any of the circumstances currently being considered.

¹³ The BML (2014) study regards areas of outstanding natural character as including both marine and terrestrial components: *...outstanding natural character assessments should combine both terrestrial and marine components so that important sequences of ecological naturalness (such as from the top of a ridge above sea level to the bottom of the adjacent sea and interconnected systems) are considered (BM: 2014, p.28)*

110. Accordingly, Mr Hudson's assessment of natural character, and the effects of the proposal on natural character, is neither reliable nor is it valid and cannot be relied upon for the purposes of the current matter.

Is the Waitata Reach a "working landscape"?

111. Mr Hudson makes frequent reference to the Waitata Reach (and Tory Channel) as being a "working landscape", or exhibiting "working landscape character". Ms Williams, in her peer review, repeats this reference, with the suggestion (p.24) that the waters of Cook Strait are a "wild landscape", while the waters of the Waitata Reach are a "working landscape". Elsewhere in her review, Ms Williams uses the term "working character".
112. No definition of what is meant by working landscape character is given by either Mr Hudson or Ms Williams.
113. At various places in his report, Mr Hudson refers to working character as being a "key site value", and also as a mitigating factor when considering the addition of further salmon farms to the landscape/seascape of the Waitata Reach. The use of the term in these contexts suggests that Mr Hudson has a flawed understanding of the concepts of values and mitigation. Mr Hudson provides no evidence that supports the proposition that within the Marlborough Sounds, landscapes of primary production (e.g., forestry, marine farming) are valued by the community.
114. The question of whether the Waitata Reach can be regarded as a working landscape, or a landscape displaying working character can be resolved with reference to my scale of natural character (Figure 4).

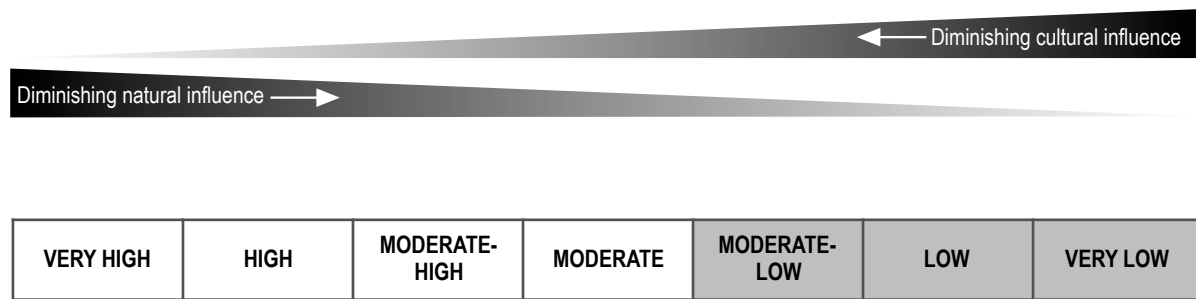


Figure 4: The scale of natural character, illustrating the range within which a landscape/seascape might be regarded as exhibiting working character (Moderate-Low - Very Low)

115. As Figure 4 illustrates, there is an inverse relationship between cultural influences and natural influences in the determination of levels of natural character. As natural influences (through the expression of natural elements, natural patterns and natural processes) dominate over evidence of human interventions through management, natural character increases. While Mr Hudson has not defined what he means by a working landscape or working landscape character, it is my opinion that such a landscape will exhibit the influences of human management and interventions to a greater extent than evidence of natural elements, patterns and processes. The Moderate range of the scale is the range within which landscape/seascapes exhibit expressions of natural and cultural influences to an equal degree. Within the Moderate-Low, Low and Very Low ranges of the scale, cultural influences dominate over natural influences. Thus a working landscape, by any reasonable definition, must rate within the Moderate-Low - Very Low range of the scale of natural character.
116. In the context of Pelorus Sound, I regard the Havelock marina and environs as an example of a landscape/seascape or area of the coastal environment with working character. In my opinion, no part of the Waitata Reach CMA can be regarded as displaying natural character within the range indicative of working character.
117. I note that there is no reference to the terms working landscape or working landscape character in the proposed MEP, and on that basis I understand the

terms to have no basis in regulatory or policy frameworks relevant to the Marlborough Sounds.

My assessment of the natural character of the Waitata Reach coastal marine environment

118. In my evidence before the NZKS BoI, I rated the natural character of the terrestrial component of the Waitata Reach to be Moderate-High, while the natural character of the marine component I rated to be High. I consider localised areas of the coastal environment within Waitata Reach, particularly off headlands where marine farming is absent, rate within the Very High range of the natural character scale for the marine component, and the High range of the scale for the terrestrial component.
119. As noted above, I have assessed the natural character of the Waitata Reach marine environment (the Coastal Marine Area, or CMA) as High. In doing so I acknowledge that landscape architects have no expertise in the assessment of the natural character of marine environments, beyond informed observation of what is visible on the surface of the waters, and what knowledge may be available from published sources.
120. The inter-tidal zone at least is available for observation and assessment, as is evidence of modification to the surface of the marine environment, for example by the installation of marine farming structures. Natural processes, such as tidal flows are also readily observed.
121. An important and observable aspect of natural character within the marine component of the coastal environment is marine fauna, particularly sea birds and marine mammals such as fur seals and dolphins. The MSRMP acknowledges this in Chapter 2, Natural Character (p.2-1):

The natural character of the coastal environment and freshwater bodies is comprised of a number of key elements which include:

...

- *Indigenous flora and fauna, and their habitats;*

...

122. I regard it as important for assessments of the natural character of the coastal environment to take account of the marine environment to the extent possible. At the very least, in making such assessments landscape experts should take into account modifications to the intertidal zone, and draw upon such knowledge as is available in the marine environment beyond this.
123. It is my opinion that in general, the natural character of the terrestrial component of the coastal environment within the Waitata Reach has been subject to considerably greater modification by forestry and agricultural development, than the marine component has by marine farming and fishing.
124. The significant difference between my ratings of natural character for the Pelorus Sound coastal environment and the ratings of the Boffa Miskell (2014) study is illustrated in the following table (Table 1).

	Steven	Boffa Miskell (2014)
Coastal Marine Area	High	Moderate-High
Coastal terrestrial area	Moderate-High	High

Table 1: Differences in natural character ratings between the Boffa Miskell (2014) assessment and my own assessment undertaken for the NZKS Bol hearing.

125. In my opinion, a reason for the differing assessments could be that the Boffa Miskell assessors have underestimated or overlooked the extent of modifications to the terrestrial environment through farm development and forestry, while over-estimating the natural character effects of marine farming on the coastal marine area of the Waitata Reach as a whole. I find it incomprehensible that the entire coastal marine area of Waitata Reach should rate only Moderate-High, except for areas of High in the area of the Pelorus Heads. I attribute this to flaws in the Boffa Miskell assessment method, which I discuss in my report to MDC on the proposed Environment Plan.

126. Differences aside, I consider it significant that neither my own assessment nor that of the BML (2014) study rate the natural character of the Waitata Reach as less than Moderate-High. With reference to the scale of natural character presented above (Table 1), the natural character of the terrestrial and marine components of the Waitata Reach fall within the range that qualifies the landscape/seascape of the Waitata Reach to be regarded as a natural landscape/seascape, and thus subject to NZCPS Policy 15(b).

127. The NZKS BoI at paragraph [655] of their final decision, made the following finding with regard to the natural character of the Waitata Reach:

[655] We find that the Reach as a whole has high natural character value which extends close to outstanding in some places, particularly on the western headlands identified by Mr Brown.

128. I acknowledge that identified areas of outstanding natural character, as recognised in the proposed MEP, are restricted to Maud Island and the Chetwode Islands and immediately adjacent waters. I note that these areas mark the southern and northern limits of the Waitata Reach, and as such are within the Level 3 coastal environment under consideration. While the proposed sites are outside these areas of ONC in a physical sense, it is possible that their location may still lead to ‘downstream’ depositional effects from waste products within the areas of ONC. I do not have the expertise to comment on the possible effects of this aspect of the the proposal on the outstanding natural character of these two areas. While experts from other disciplines may differ in their opinions on this issue, I accept that to the extent of my knowledge and expertise, the proposal may not be subject to NZCPS Policy 13(1)(a):

avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character;

129. However, Policy 13(b) remains as a relevant provision of the NZCPS with reference to which the current matter must be considered:

(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;

130. It is my opinion that the proposed relocation of 5 salmon farms to the Waitata Reach constitutes a significant adverse effect on the natural character of the coastal environment in this area and thus should be avoided. If it should be determined that the effects are not significantly adverse, it is my opinion that the effects can neither be remedied nor mitigated, and thus must also be avoided.
131. The basis for the effects being significantly adverse is the cumulative level of marine farming and other developments within the Waitata Reach. Collectively, it is my opinion that these developments have reached the threshold for cumulative adverse effects, beyond which further effects must be avoided. I understand this opinion to be the view of the BoI in the original NZKS hearing, and also the view of the Environment Court in *KPF Investments*. I turn now to a consideration of cumulative effects.

IS DEVELOPMENT WITHIN THE WAITATA REACH AT THE THRESHOLD OF UNACCEPTABLE CUMULATIVE EFFECTS?

The assessment of effects

132. There is currently no NZILA endorsed best practice guide for the undertaking of landscape and visual effects assessments in NZ. In the absence of locally produced documentation, NZ practitioners are increasingly drawing upon the UK publication, *Guidelines for landscape and visual impact assessment* (2013) (GLVIA)¹⁴. My assessment of cumulative effects draws upon definitions and principles presented in this publication.
133. Cumulative effects are defined in the GLVIA (p.120) as those that:
- result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated with or separate to it), or actions that occurred in the past, present, or are likely to occur in the foreseeable future.*

¹⁴ Landscape Institute and Institute of Environmental Management and Assessment (2013) *Guidelines for landscape and visual impact assessment*, 3rd edition, Routledge.

134. In considering the current matter, cumulative effects must be understood in terms of the totality of changes evident to the landscape and natural character within the Waitata Reach, and not simply the cumulative effects arising from each additional salmon farm. As such, the cumulative effects of marine farming generally - and the current proposal in particular - must be considered together with all other modifications to the landscape and coastal environment within the Waitata Reach. When marine farming is combined with terrestrial activities such as forestry, agriculture, holiday home and tourism developments, the cumulative effects become greater and pose significant threats to the natural character and overall significance of the Marlborough Sounds landscapes, wherever such developments occur. This is certainly the case in the Waitata Reach, where two salmon farms have already been added to a landscape and coastal environment I consider to be significantly compromised in terms of cumulative effects.
135. There are three broad areas for the assessment of effects in a matter such as this:
- 135.1. Landscape effects (which in the circumstances should be regarded as landscape/seascape effects). These are effects on the physical fabric of the landscape/seascape, such as changes to the biophysical elements that make up the landscape and give it its distinctive character. These effects may involve the addition, deletion, or modification of biophysical elements that lead to changes in the character of a landscape.
 - 135.2. Natural character effects¹⁵. These are effects that change or impact upon natural elements, natural patterns and the operation or functioning of the natural processes that define the natural character of a landscape/seascape or area of the coastal environment.

¹⁵ The GLVIA does not refer specifically to effects on natural character, but rather to landscape character generally. The concept of the natural character of the coastal environment is a narrow aspect of the wider concept of landscape character that has its origins in the Town and Country Planning Act 1977 3(1)(c), RMA s6(a) and NZCPS Policy 13.

- 135.3. Visual effects Visual effects may be understood as the; “the effects of change and development on the views available to people and their visual amenity” (GLVIA p.98).
136. These are related concepts, given that landscape and natural character are perceptual phenomena, understood in particular as the result of visual perception. The distinction, subtle it may seem, may be understood in the following terms:
- 136.1. landscape and natural character effects are those that change the biophysical fabric of the landscape/seascape, the processes operating within or upon landscape/seascape, and which materially change the character or natural character of landscape, seascape or coastal environment. They are tangible, objectively verifiable changes observable within the environment.
- 136.2. visual effects occur within the minds of the viewers, and are able to be expressed in terms of changes to the amenity experienced and enjoyed by viewers.
137. In short, the source of landscape and natural character effects is the physical environment, while the source of visual effects is the viewer. An important implication of this is that landscape and natural character effects exist independently of the viewer’s experience. They do not vary according to the size of the viewing audience, nor the nature of viewer experience, such as the distance from which a change is viewed.
138. With regard to the consideration of landscape effects, the appropriate context for the assessment of effects is the Waitata Reach landscape, as defined elsewhere in this evidence (Figure 2). This landscape includes the waters of the Waitata Reach, and the enclosing landforms, including associated bays and inlets. As noted earlier in my evidence, this context is consistent with that agreed on by the landscape expert witnesses appearing before the NZKS BoI, and subsequently endorsed by the board in its final decision:

[644] There was general consensus between the landscape architects that the location and general character of the Reach needs to be appreciated in the context of the overall labyrinth of waterways known as Pelorus Sound. There was little or no disagreement as to its setting.

139. The spatial context for the consideration of visual effects is the same as for landscape effects.
140. The context for the consideration of effects on the natural character of the coastal environment may also be regarded as the landscape/seascape, as defined elsewhere in my Figure 2. While I have stated that landscape and coastal environment are different concepts, the boundaries of which do not necessarily coincide, the basis for applying the same spatial frame of reference in this matter is the fact that the Waitata Reach coastal environment extends inland to the catchment ridgelines that also define the landscape.

The NZKS Board of Inquiry on Cumulative Effects

141. The decision of the NZKS Board of Inquiry to grant consent for salmon farms at Waitata and Richmond compounds further the cumulative adverse effects associated with marine farming in the Waitata Reach. I regard it as significant that applications for salmon farms at Kaitira, Tapipi and White Horse Rock were declined. The Kaitira and Tapipi salmon farms were declined for reasons of cumulative effects on natural character, landscape and seascape qualities.
142. In its final decision, the board identified the Waitata Reach as being an area of the Sounds in a “fine state of balance” with respect to the effects of development on landscape significance and natural character, but noted that little of this development has yet extended into the main channels of the Sounds:

[574] Few parts of the Marlborough Sounds are wholly natural. Mussel farming, in particular, lines the margins of many inlets and bays – from Croiselles Harbour to East Bay, and parts of Tory Channel. Throughout most of the Sounds, areas of open pasture, pockets of residential settlement and – perhaps most obvious of all – production forestry, leave their mark on the

local landscape, disturbing its natural gradients and patterns. Tory Channel and the upper reaches of Pelorus Sound go well beyond this, as both appear seriously degraded from a landscape and natural character standpoint, despite being key gateways to the Sounds as a whole.

[575] Hardly surprising therefore, that some of the least modified parts of the Sounds – such as Port Gore, the Waitata Reach, and Queen Charlotte Sound approaching Picton from Cook Strait – remain in a fine state of balance. The question is – to what extent these landscapes are able to withstand change and development, and at what scale?

[576] Most of the inlets and bays either side of Pelorus Sound, as well as in the vicinity of Port Gore, are already lined by a significant proportion of the 575 consented marine farms scattered throughout the Marlborough Sounds. Fortunately, few of these current operations extend beyond their more sheltered bay margins out into the Sounds' main channels.

143. On the matter of natural character effects, the board found (final decision, paragraphs [697-698]):

[697] Our site visits confirmed Mr Rough's opinion to us that in comparison to mussel farms, salmon farms are a highly visible form of marine farm. As a consequence, the mere presence of salmon farms in the Waitata Reach, and their cumulative effects constitutes a substantive issue in respect of the effects of the proposal on the natural character of that Reach.

[698] The cumulative effect of the five proposed farms, in conjunction with the other consented salmon farms (Port Ligar and Waihinu Bay) would, in our view, have a high impact on the natural character of this Reach of Pelorus Sound. We find that, individually, each new farm would have an effect on natural character. Given the prominent locations of the White Horse Rock/Waitata site, Kaitira and Tapihi, even if only one or two of these farms were consented, the effect on natural character would be high.

144. In consideration of the evidence on landscape and visual effects, the board found (final decision, paragraph [713]):

[713] We accordingly find that:

[a] Five farms would have a decisive cumulative effect and from a visual and aesthetic point of view the two most prominent farms of Kaitira and Tapihi are the defining element of the decisive cumulative

effect; and

[b] At a more local level, the five proposed farms would have adverse visual effects. The most severe effects would be created by Kaitira and Richmond.

[emphasis in original]

145. At paragraphs 1249-1250 of its final decision, the board noted in its conclusions on natural character and landscape that these sites are located within an area regarded as the ‘gateway’ Pelorus Sound - an area with memorable views, whether entering or leaving the Sound. As such, the Waitata Reach location of the proposed NZKS farm was considered highly sensitive to further reductions in natural character and adverse effects on landscape value, such as aesthetics:

[1249] The Waitata Reach has been described as the “gateway” to Pelorus Sound from Cook Strait, with the twin promontories of Te Akaroa and Kaitira being the two key features. We have found the Kaitira headland to be an Outstanding Natural Landscape. We have assessed that the proposed Kaitira and Tapipi farms would be prominently situated in the “gateway” which has memorable views whether entering or leaving the Sounds.

[1250] The effect on the Outstanding Natural Landscape of the Kaitira headland would be high, thus not giving effect to Policy 15(a) of the Coastal Policy Statement. We have found that the cumulative effect of the proposed farms would have a high impact on the natural character of the Reach, and a very high effect on the prominent, highly visible location of Kaitira and Tapipi sites.

146. The board concluded, at paragraphs [1252 - 1254], that the overall cumulative effects would be high:

[1252] After careful consideration of all the balancing factors, we conclude that the siting of four proposed farms in this Reach would not be appropriate. The assimilative capacity of the receiving waters and the potential cumulative effects on the foraging areas of the King Shag are uncertain. The cumulative effects of the Kaitira and Tapipi on the natural character, landscape and seascape qualities of the entrance to the Sounds would be high. Further, Tapipi lies in the path of a traditional waka route – a taonga to Ngati Koata. It would also be in the vicinity of recorded sites of significance to Maori.

[1253] To grant all of the zones would not give effect to the statutory provisions in respect of natural character, landscape, Maori, or ecological matters. The overall cumulative effects would be high.

[1254] We accordingly grant the request with respect to Waitata and Richmond, but decline the request with respect to Kaitira and Tapipi.

Mr Hudson's assessment of cumulative effects

147. Mr Hudson addresses cumulative effects at pages 7-9 of his report. His approach to the assessment of cumulative effects appears to be based on the following statement (Hudson report, p.10):

When assessing cumulative effects, the sites have been considered in terms of the following:

Simultaneous: where two or more salmon farms are seen at the same time from the same viewpoints,

Successive: where two or more salmon farms are present in views from the same viewpoint but cannot be seen at the same time as the viewer needs to turn his or her head,

Sequential: where two or more salmon farms are not present in views from the same viewpoint and cannot therefore ever be seen at the same time if the observer moved around the arc of view. Here the observer has to move through the landscape/seascape area.

148. From this discussion, my understanding of Mr Hudson's approach is that he assesses cumulative effects only with regard to the proposed salmon farm sites, individually and in relationship to each other. Existing modifications to landscape and natural character within the Waitata Reach - the effects of which will be compounded by the proposed farms - are not recognised or addressed as part of the wider issue of cumulative effects.
149. In particular, Mr Hudson's approach to cumulative effects precludes consideration of other marine farms within the Waitata Reach. However, this is done by way of an analytical deceit which has the effect of excluding from consideration all the side bays within which the predominance of mussel

farms are located. At page 9 of the Hudson report, in justifying the omission of mussel farms from the assessment of effects, he states:

Mussel farms are located in many side bays, such as Waitata, Wahinuau, Port Ligar, Horseshoe and Blowhole (north and south), but these are generally absent from Waitata Reach itself, with marine farming being confined to the existing salmon farms. For this reason, mussel farms are not considered to contribute to the cumulative effects assessment within Waitata Reach, with this assessment focusing primarily on the effect of 5 salmon farms additional to those existing or consented.

150. Mr Hudson's exclusion from consideration of marine farm development within the side bays of the Waitata Reach is based on a narrow, and in my opinion invalid analysis of the landscape/seascape and coastal environment context for the proposal. I have identified what I regard to be the appropriate context earlier in my evidence (Figure 2).
151. Mr Hudson's assessment of cumulative effects is compromised further by a number of other deficiencies in his analysis:
 - 151.1. His approach appears to privilege the assessment of visual effects, and ignore effects on the biophysical landscape/seascape, and natural character. Further, I understand Mr Hudson's assessment to be based to a large extent on the experience of the proposed farms from the perspective of a viewer traveling through the Reach on a boat. This in turn is based on certain assumptions regarding the courses taken by vessels traveling the Reach and its approaches. While the view from vessels is relevant to visual effects, it is not of itself sufficient. A more holistic overview is also required, together with an analysis of landscape and natural character effects, that are not subject to the contextual and behavioural complexities of views.
 - 151.2. Mr Hudson's focus upon visual effects is repeated in the MWH summary assessment of environmental effects document (paragraph 6.8.4, p.106):

6.8.4 Policy Issues

*Policies relevant to landscape and natural character have been identified in sections 6.2 – 6.6 above. As outlined above, on the basis of the information currently available, **significant adverse effects on natural character are not anticipated from the cumulative effects of viewing multiple sites within Waitata Reach**, and effects on landscape will be no more than minor, although there is a difference in professional opinion in relation to this between the Landscape Report and the peer review. [emphasis added]*

151.3. In his analysis of visual effects, Mr Hudson (p.10) distinguishes between simultaneous and successive views - the distinction being whether viewers hold their heads still, or turn their heads. This is a spurious distinction in my opinion, and one that has no theoretical or empirical support that I am aware of. The basis for Mr Hudson making these distinctions is not explained.

151.4. There is an apparent focus upon whether the areas affected are identified as outstanding with respect to landscape value or natural character in the MEP. This may be an oblique reference to the implications of the Supreme Court's interpretation of NZCPS Policy 13(a), requiring the avoidance of ; "...adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character". Nowhere in Mr Hudson's report does he acknowledge NZCPS Policy 13(b):

*avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character **in all other areas of the coastal environment**; [emphasis added]*

151.5. The words; *in all other areas of the coastal environment* refer to all areas of the coastal environment not otherwise identified as having outstanding natural character. The level of natural character assessed for such areas is immaterial, and may be assessed as falling within any range of the scale presented at Figure 3 of my evidence. An implication of Mr Hudson's approach appears to be that in the absence of areas of outstandingness (which is incorrect with respect to the Blowhole Point area, according to the proposed MEP), NZCPS Policies 13 and 15 do not apply.

- 151.6. Existing development appears to be taken as justification for further development at individual sites. With regard to the Blowhole Point sites, Mr Hudson states in his Conclusion on cumulative effects (p.11);

*The only area where landscape values are mapped as outstanding is in the Proposed Plan beyond the gateway at Blowhole North and South. In these bays, the site specific characteristics and values are not assessed as outstanding for landscape values **due to the degree of terrestrial and marine modification present in the specific locations**. Cumulative effects at these two bays will not be significant **due to the dominance of the landform and existing modifications present**. When the Blowhole cumulative sequential effects are considered at the wider gateway and reach scale, as identified in the Proposed Plan and characterisation above, the scale and location of the two farms is such that the effects on the key values that cause parts of the wider gateway and reach to be identified as Outstanding in the Proposed Plan will be no more than minor. [emphasis added]*

152. As well as appearing to justify further modifications on the basis of existing changes, this last quote from the Hudson report appears to be contrary to the views of the BoI. The BoI declined the Kaitira site (which the BoI determined to be adjacent to an ONL, being the Kaitira Headland, which correctly should be referred to as an ONF) largely on the basis of its potential effects on the seascape qualities that mark the “gateway to the Pelorus Sound”. Mr Hudson proposes two sites for this same locality - albeit on the western side of the gateway rather than the east - while maintaining effects will be no more than minor. This is not a reliable or credible analysis in my opinion.

My assessment of cumulative effects

153. My evidence to the NZKS Board of Inquiry expressed the opinion that within many parts of the outer Pelorus Sounds, existing marine farming has reached a density that can be regarded as being at the threshold for unacceptable cumulative adverse effects associated with marine farming development. In some areas the extent of mussel farming may already exceed community perceptions of acceptable levels of cumulative adverse effects.
154. I have expressed the same opinion in expert evidence presented to the Environment Court in *KPF Investments v Marlborough District Council, RJ*

Davidson Family Trust v Marlborough District Council, and Clearwater Mussels Ltd v Marlborough District Council.

155. The extent of consented marine farm development within the outer Pelorus Sound area is shown in a section of a map published by Marlborough District Council, reproduced as the base for my Figure 2. Figure 2 illustrates the current extent of marine farming within the outer Pelorus Sound, including Waitata Reach and adjacent bays, together with the proposed locations of the 5 salmon farms to be relocated. For convenience I have reproduced the base map below as Figure 4¹⁶.
156. The extent of marine farm development within the outer Pelorus Sound is clearly evident in this map, but it is significant that the main channel of the Waitata Reach - currently Coastal Marine Zone 1 (CMZ1), an area from which marine farming is precluded - is relatively free of marine farming development. The NZKS Board of Inquiry final decision (paragraph [576]) had this to say on this absence:

*[576] Most of the inlets and bays either side of Pelorus Sound, as well as in the vicinity of Port Gore, are already lined by a significant proportion of the 575 consented marine farms scattered throughout the Marlborough Sounds. **Fortunately, few of these current operations extend beyond their more sheltered bay margins out into the Sounds' main channels.***

[emphasis added]

157. It would appear from this statement that the view of the BoI was that it would be unfortunate were marine farming operations to extend into the main channels of the Waitata Reach. The Board's decision to permit the development of the Waitata and Kopaua salmon farms was made on the basis that 2 farms were considered acceptable, but three - or more - farms exceeded the level of acceptable adverse effects.

¹⁶ The full map is available on-line through the MDC Smart Maps facility. Map reproduced current at date shown on map: 31 Jan 2017.

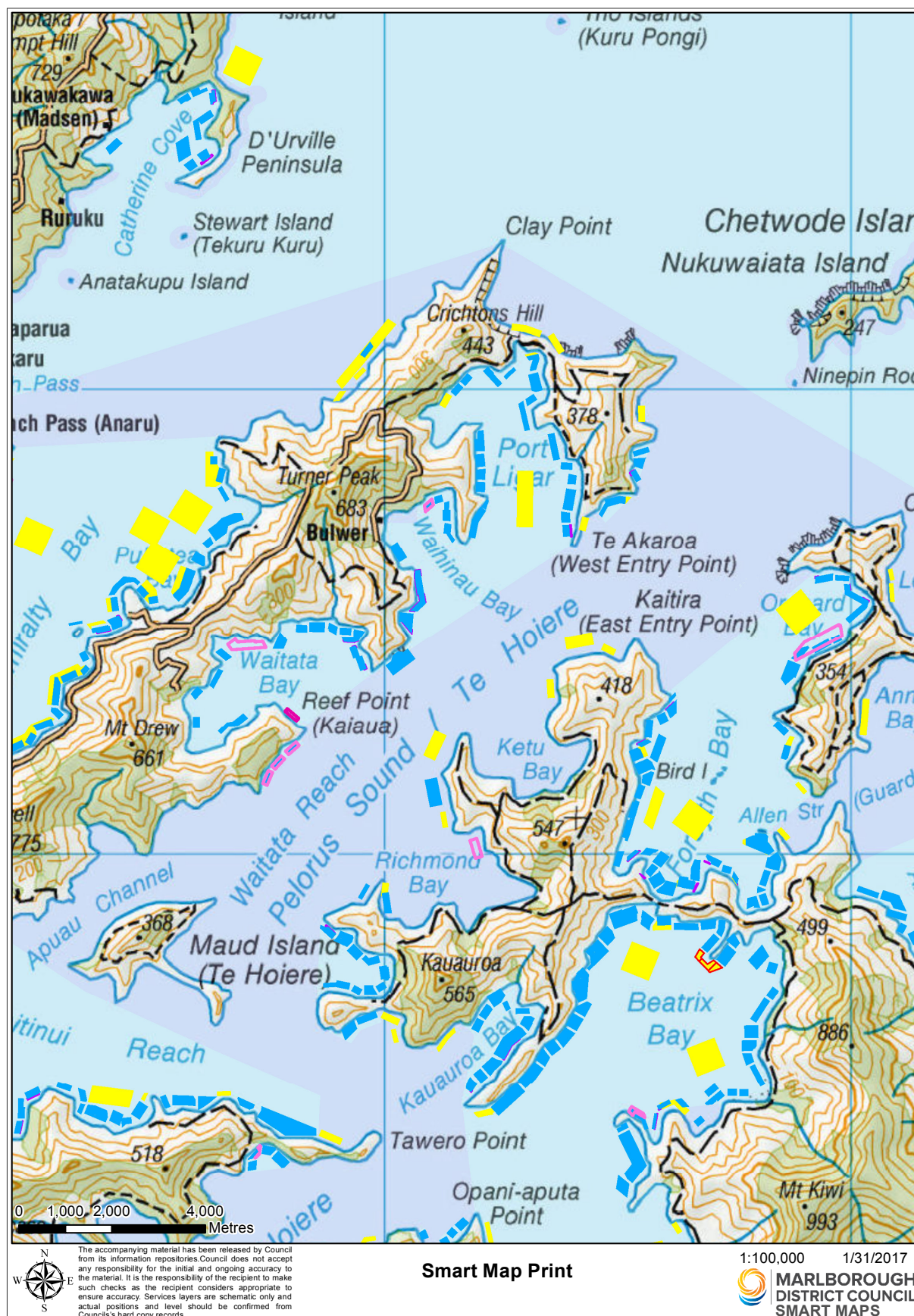


Figure 5: The current extent of marine farm development, outer Pelorus Sound.
 Legend: Blue - Granted; Yellow - Refused; Pink - Processing. Source MDC Smart Maps

158. In my opinion, with the addition of two further salmon farms to the Waitata Reach, the threshold for what may be considered an acceptable level of marine farm development with respect to landscape, natural character and the enjoyment of amenity has clearly been reached. The development of a further 5 salmon farms in the Waitata Reach will, in my opinion take marine farm development in the outer Pelorus Sound generally , and the Waitata Reach in particular, well beyond the threshold of acceptable cumulative effects, as these relate to landscape and natural character.
159. The particular aspect of landscape to be adversely affected is the aesthetic value of the Waitata Reach and the amenity that this affords to those who experience this place. The effects of the proposed farms on aesthetic value derive largely from the issues of fitness and congruity. Many maritime developments and infrastructure (e.g., wharves, jetties, boatsheds, navigation lights), display congruity, or a sense of fitness or appropriateness to their context, or a sense of belonging in the place where they are found. The incongruous character of the farms in their contexts, the absence of any redeeming aesthetic value in the farms as structures, and the effects these issues have on perceptions of natural character will result in a significant reduction in aesthetic value in the localities within which they will be seen or otherwise experienced.
160. While the proposed salmon farms are totally within the marine environment (seascape), with the exception of the mid-Waitata Reach site, they will generally be seen against the backdrop of the terrestrial component of the landscape/seascape, particularly when viewed from the surface of the water. From such positions it will be common to view the farms against the land-sea interface, which I regard as a highly sensitive area of the landscape/seascape. The land/sea interface is the area that attracts the greatest focal attention, owing to the sharp contrasts and interactions between land and water (e.g., erosion and deposition) that are perceived in this area. The perception of the land/sea interface contributes greatly to the aesthetic appreciation of the Waitata Reach and the Sounds generally.

161. With regard to adverse effects on natural character, the 5 proposed relocated farms will result in adverse effects on each of natural elements, natural patterns and natural processes of the Waitata Reach CMA:

161.1. The proposed farms and related infrastructure constitute unnatural structural elements within the CMA. At the level of the site, the effect of inserting such structures into the marine environment is significantly adverse, and is an effect completely independent of the viewing distances assessed by Mr Hudson.

161.2. The proposed farms will add conspicuous and incongruous structural components to the surface of the marine environment within relatively close proximity to the shoreline, disrupting natural patterns, particularly where these are apparent as an uncluttered planar surface of water abutting the land.

161.3. Natural processes within the CMA will be adversely affected through the concentration of large populations of fish within the water column, the addition of feed, and the discharge of effluent from the fish, with consequential effects on water quality and the benthic environment immediately below, and within the depositional footprint of the farms. The natural behavioural patterns of wildlife (sea birds and seals) will change as a consequence of habituation to the sites. Changed patterns of wildlife behaviour come to be regarded as wildlife nuisance, and “seal incidents”.

162. I understand Ms Williams, in her peer review of the Hudson report, to reach a similar conclusion. Discussing cumulative effects on the Waitata Reach, Ms Williams states (p.73):

...the addition[al] of five salmon farms to create a total of seven farms since the BOI, and including a farm sited in the middle of Waitata Reach will have High to Very High cumulative effects on natural character. Given the high experiential values and visual amenity of Waitata Reach, I would expect cumulative effects on landscape values to be High.

The Proposed MEP, and Significant Adverse Effects

163. The Proposed Marlborough Environment Plan states the basis for assessing whether an adverse effect is a significant adverse effect:

Policy 6.2.3 – Where natural character is classified as high or very high, avoid any reduction in the degree of natural character of the coastal environment or freshwater bodies.

The degree of adverse effects on coastal natural character is an important consideration under Policy 13 of the NZCPS. This policy establishes a threshold for the extent of further change that can be made in coastal environments that have high or very high natural character. Any activity that would have the effect of reducing the natural character at or near the site to a classification below that which exists at the time of making a resource consent application or plan change request, will be considered a significant adverse effect in the context of Policy 13(1)(b) of the NZCPS and should therefore be avoided. ...

164. As stated earlier in my evidence, I consider the natural character of the CMA of the Waitata Reach is currently High. The development of a marine farm within any part of the Waitata Reach not currently developed for marine farming would have the effect of: “...*reducing the natural character **at or near the site** to a classification below that which exists at the time of making a resource consent application or plan change request*”. In such circumstances, I regard any new salmon farm as an unacceptable adverse effect on natural character. Such unacceptable adverse effects would be apparent at the scale of the site and its immediate locality for individual farms, and cumulatively throughout the Waitata Reach when considered in terms of all proposed farms.
165. In my opinion, the magnitude of cumulative adverse effects falls within what is intended by the words *significant adverse effects* in NZCPS with regard to both natural character and landscape:

Policy 13

(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;

Policy 15

(b) avoid significant adverse effects and avoid, remedy, or mitigate other adverse effects of activities on other natural features and natural landscapes in the coastal environment;

166. As I have stated, with regard to NZCPS Policy 13, the level of natural character of the Waitata Reach is immaterial as far as the application of Policy 13(b) is concerned, and so it is of no consequence that - with the exception of Maud Island and the Chetwode Island - no parts of the Waitata Reach have been identified as having outstanding natural character. Natural character is evident throughout the Reach, at a level that I have assessed as High. The principal concern is whether the proposed relocation of 5 salmon farms to Waitata Reach will have adverse effects on prevailing levels of natural character (as rated anywhere along the scale), considered in terms of changes to any or all of natural elements, natural patterns and natural processes.
167. With regard to Policy 15(b), the Waitata Reach is clearly a natural landscape/seascape. Whether it is also an outstanding natural landscape/seascape is yet to be determined with any authority, however I have stated my opinion that it is. Regardless of its outstanding status, the factors by which adverse effects on a landscape are to be considered remain the same: (1) values associated with natural science aspects, (2) values associated with sensory (aesthetic) qualities, and (3) values associated with particular associations and meanings.
168. In consideration of Policies 13(b) and 15(b) the issue remaining to be resolved is the question of whether the effects of the proposed developments can be remedied or mitigated. I address this in the next section of my evidence.

CAN THE ADVERSE EFFECTS BE REMEDIED OR MITIGATED?

169. In discussing cumulative effects at page 11 of his report, Mr Hudson claims:

The primary mitigation for sequential effects is the overall length of the Reach at more than 12km, the broad and dominant scale of the setting and the modifying characteristics that already exist.

170. I understand Mr Hudson to be referring to the mitigation of natural character, landscape and amenity effects in this context.
171. My understanding of mitigation as a resource management tool or practice is that it is a purposeful concession, or design consideration on the part of the developer, relating to the development itself. I do not accept that characteristics of the receiving environment (the dominant scale of the setting and modifying characteristics that already exist) can qualify as mitigation, as these factors are given and independent of the proposal.
172. Other references to the a “visually complex backdrop” and “working landscape character” (p.21) as a mitigating factor are equally irrelevant in my opinion.
173. The only valid mitigating factor proposed by Mr Hudson is the reference to the shape of the pens and the use of dark colours:
- It is recommended that the proposed farms adopt round pens and dark recessive colouring for all structures in this high amenity landscape (p.11).*
174. I understand Mr Hudson to recommend circular pens for both the Blowhole Point sites, and the mid-channel Waitata site, but that dark recessive colours are used at all sites.
175. There are no proposals presented in the Hudson report for the remediation of adverse effects.

Mitigation with respect to natural character

176. In my opinion, the use of circular pens and recessive colours is irrelevant as a device for mitigating natural character effects. These measures may diminish the visibility of the structures from certain distances in certain light conditions, but the physical fact of there being a salmon farm in the coastal environment remains, and other adverse effects on natural character will occur. As I have noted earlier in this evidence, the presence of the proposed salmon farms and their adverse effects on natural character would be an objectively verifiable fact, the visibility of which does not diminish the

adversity of effects. Effects will relate to the changes in the expression of natural elements, natural patterns and natural processes, and will include:

- 176.1. the introduction of unnatural, structural elements into the sea surface and water column,
 - 176.2. adverse effects of habituation of wildlife (sea birds and seals) to the sites, and the effects this will have on perceptions of natural character through modifications to wildlife behaviour,
 - 176.3. the captive farming of genetically improved fish, bred in captivity,
 - 176.4. the disruptions caused to natural flows of water,
 - 176.5. changes to the composition of benthic communities beneath the sites through the deposition of salmon faecal matter.
 - 176.6. Salmon farms require frequent attendance of staff, and facilities for the storage of feed and equipment. If staff and utility storage is not provided on site, then this must be provided by daily visits from service vessels. Human activity associated with salmon farm management diminishes natural character.
177. I am unaware of any manner in which the adverse effects of salmon farms on natural character can be mitigated. I consider the only option is to avoid the adverse effects altogether.

Mitigation with respect to landscape value and amenity

178. I accept that in some circumstances the use of recessive colours may reduce the visibility of salmon farming structures, but this is largely dependent on viewing distance, the elevation of the viewer, and atmospheric and sea surface conditions. Recessive colours are not of themselves sufficient mitigating measures to reduce adverse effects on aesthetic appreciation of the landscape/seascape and visual amenity.
179. Salmon farms are an industrial artefact, with structural components that may rise to over 2 m above sea level, constructed of steel and metals and synthetic

materials which may often appear as highly reflective surfaces. While the holding pens for salmon are largely submerged, the superstructure required for predator exclusion (fur seals in particular, but also sea birds feeding on salmon food) can be quite substantial and visually prominent.

180. With the exception of the Waitata mid-channel site, all proposed sites are located close to the shore, within an area that is particularly sensitive to viewing - the land-sea interface and adjacent waters. This is an area that in my opinion holds a particular fascination for viewers.
181. The intricate and at times confusing complexity of the land/sea interface is a significant aspect in terms of defining the character and aesthetic quality of all parts of the Sounds. Indeed, the experience of the land/sea interface could be regarded as one of the defining characteristics of the Sounds. The land/sea interface draws the eye, and is the most sensitive area of each landscape - the area most likely to be compromised in terms of natural character and aesthetic quality through marine farming and development. In my opinion, marine farms within the marginal waters of the Sounds occupy the most the most visually sensitive and visually vulnerable locations.
182. These marginal areas, where land and sea meet, offer a diverse range of rich aesthetic and recreational experiences. These are dynamic environments, changing daily with the ebb and flow of the tides, impacted by currents and weather systems, and responding to the impact of natural forces on ancient geology. These are ecologically rich areas, both in terrestrial and marine communities, offering roosting, breeding and loafing places for marine mammals and birds and a diversity of plant life. The shallow waters of the margins also afford opportunities to view the sea floor, and where beaches offer opportunities to land, to explore the inter-tidal zone and forest margins. These areas are also accessible to a wide range of water craft, from kayaks to larger powered vessels, and I regard it as a matter of considerable concern that marine farming has become ubiquitous around the coastal margins throughout so much of Pelorus Sound.

183. In my opinion, the potential for mitigating the adverse effects of salmon farms on aesthetic value and visual amenity can only be mitigated to a minor degree by facilities design and colour. Such mitigatory measures are effective only in circumstances that are beyond the control of the developer, being:
- viewing distance
 - viewing elevation
 - atmospheric conditions
 - sea conditions
 - viewer behaviour
184. As NZKS has no control over any of these factors, the potential for mitigation through the design of structures is unacceptably limited, in my opinion.

CONCLUSION: DOES THE PROPOSAL REPRESENT APPROPRIATE DEVELOPMENT?

185. My comments on the appropriateness of the proposal relate to natural character and landscape value. This is a conclusion that draws on factors selectively, according to my expertise, and I do not purport this to be a decision based on a comprehensive consideration of all relevant factors.
186. The question of whether the proposal constitutes appropriate development in terms of NZCPS Policies 13 and 15 must be addressed. What is appropriate is to be considered in terms of those aspects of the landscape or coastal environment that are to be protected or preserved¹⁷. In this particular matter it is natural character, and landscape value - particularly that landscape value associated with the aesthetic appreciation of the Waitata Reach.
187. In the previous sections I have concluded that the proposal will result in significant levels of adverse effects on natural character of the coastal environment, on landscape value (particularly with regard to aesthetic appreciation) and on visual amenity.

¹⁷ I note that the Supreme Court in the *NZ King Salmon* decision made the following comment regarding “inappropriateness”:

[105] We consider that “inappropriate” should be interpreted in s 6(a), (b) and (f) against the backdrop of what is sought to be protected or preserved. That is, in our view, the natural meaning.

188. I have also concluded that the adverse effects of the proposed relocation can neither be mitigated nor avoided. As such, and consistent with NZCPS Policies 13(b) and 15(b), in my opinion they should be avoided.
189. The Blowhole Point sites are proposed within an area identified within the proposed MEP as an outstanding natural feature and an outstanding natural landscape. In such circumstances, NZCP Policy 15(a) is relevant, and the only option in response to adverse effects is avoidance.
190. My concluding opinion is that the proposal - insofar as the Waitata Reach is concerned - does not give effect to Policies 13 and 15 of the New Zealand Coastal Policy Statement (2010) and should not be approved.

THE DRAKEFORD WILLIAMS PEER REVIEW

191. A peer review of the Hudson landscape and natural character assessment has been undertaken by Julia Williams of Drakeford Williams Ltd.
192. Ms Williams records that, in undertaking her own analysis, she had regard to expert evidence presented to the NZKS Board of Inquiry by landscape experts, and specifically refers to evidence presented by landscape architects Frank Boffa, Peter Rough and Stephen Brown. Ms Williams quotes widely from the evidence of these landscape architects, noting that their evidence; “...provides an in-depth evaluation of ‘Waitata Reach’ natural character and landscape values...”.
193. Ms Williams’ peer review omits to mention that I also presented evidence to the NZKS Board of Inquiry, addressing landscape and natural character matters in both the Waitata Reach and Queen Charlotte Sound.
194. Stage 1 of Ms William’s report is a methodology review, that commences with the statement (p.4):

The methodology review is based on the methodology contained in NZILA Best Practice Note: Landscape Assessment and Sustainable Management (10.1)

195. Ms Williams continues, noting that the Hudson reports draws upon recent studies on landscape and natural character undertaken for Marlborough District Council, and stating that these studies:

...use recently established best practice methodology to articulate the complex differences between landscape and natural character attributes.

196. Ms Williams summary of her methodology review concludes that the Hudson report; "...follows best practice methodology that is robust in principle and uses appropriate and consistent comparison measures".
197. References to the Hudson report applying best practice methodology is misleading at best. It is incorrect if by 'methodology', Hudson and Williams refer to a system of clearly articulated methods and techniques that are both valid and reliable, and which include statements of the objectives, and the underlying, guiding principles and reasons for selecting certain methods and techniques.
198. There is not yet a best practice methodology for landscape assessment in New Zealand, and certainly no approach that can be described as robust - or to use more technical terms of evaluation, valid and reliable.



ML Steven
26 March 2017

APPENDIX A WHAT IS A LANDSCAPE?

Excerpt from Environment Court decision, [2014] NZEnvC 152, *Pelorus Wildlife Sanctuaries v Marlborough District Council*.

What is a “landscape”?

[47] We accept that “landscape” can be considered at various scales, depending on the context - as recognised by the Supreme Court in *Environmental Defence Society v The New Zealand King Salmon Company Ltd*. However those scales cannot be so large or small that they warp the meaning of the word used by Parliament.

[48] Landscape is defined in the *Shorter Oxford English Dictionary* as; “...a prospect of inland scenery, such as can be taken in at a glance from one point of view.” The NZ Oxford Dictionary definition is (relevantly):

- 1 Natural or imaginary scenery as seen in a broad view
- 2 (often attrib.) a picture representing this; the genre of landscape painting
- 3 ...

The NZ definition partly confuses, it seems to us, the first meaning with the second. But the sense of a broad expanse is common to the term “landscape” when it applies to an actual place rather than to an image of a (real or imagined) place.

[49] Features - as the word is used in section 6(b) - are (usually) smaller components of landscape. As the court stated in *Wakatipu Environment Society Inc v Queenstown Lakes District Council*:

We consider the words “landscape” and “feature” are used deliberately in section 6(b) and that “feature” means:

... a distinctive or characteristic part of a [landscape]

[50] In descriptions of larger landscapes such as the “Central Otago landscape” or the “Marlborough Sounds”, landscape means a “landscape type” or “a collection of adjacent similar landscapes”. Given the wide definition of environment(s) in section 2 of the RMA and the other areal terms used in section 6 (...) we hold that Parliament did not intend “landscape” in section 6(b) to be used in the modern broader senses whether as a substitute for “environment”(which is defined in the RMA) or as a “landscape type”.

[51] We have recognised that landscapes may be seen/assessed at various scales depending on context. However, when used of a large area the word “landscape” tends to morph into a second sense of “landscape type” as discussed. Or when used of an area that is less than a viewer sees at a glance, then the area is probably a landscape unit, or a feature, rather than a landscape. As between those extremes, section 6(b) of the RMA is usually concerned with the smallest scale at which we can consider a landscape.

[52] We hold that the word “landscape” is being used in section 6(b) primarily in the picturesque sense of an area that can be seen at a glance. We also note in passing that there is an issue - never tested - as to whether section 6(b) was ever intended to apply to the coastal environment. Parliament may have intended that a landscape is an area of inland scenery as opposed to a “seascape”. Section 6(a) and (b) could have been intended to be complementary, rather than overlapping.

APPENDIX B: THE CONCEPT OF NATURAL CHARACTER AND ITS ASSESSMENT

1. Natural character is an aspect of the wider concept of landscape character¹⁸. Both phenomena are the product of a reasoned, descriptive analyses of a landscape. They are not 'values' per se, although landscape character and natural character may be valued. It is in valuing particular aspects landscape character that a landscape assumes significance, such as may be indicated by the accolade 'outstanding', when used in s6(b) terms. The question of whether a particular expression of natural character is valued must be determined by a separate evaluative exercise. However, I qualify this statement by acknowledging that s6(a) of the RMA does establish a value for natural character, particularly insofar as the natural character of the coastal environment is concerned, being referred to as one of several 'matters of national importance' in Part 2, section 6 of the RMA:

The preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:

2. The NZCPS does not define natural character. A recurring definition of natural character emerged from a Department of Conservation (DoC) publication¹⁹ that resulted from a national workshop conducted by DoC on the interpretation of the NZCPS. The publication proposes the following definition of natural character:

Natural character is the term used to describe the natural elements of all coastal environments. The degree or level of natural character within an environment depends on:

1. *The extent to which the natural elements, patterns and processes occur*
2. *The nature and extent of modification to the ecosystems and landscape/seascape. The degree of natural character is highest where there is least modification*

¹⁸ Landscape character is defined in the *Guidelines for landscape and visual impact assessment* (3rd edn., 2013) as "A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse."

¹⁹ Department of Conservation, 2012, *Natural character and the NZCPS 2010 National Workshop - Summary of discussion and outcomes*. p.19

The effect of different types of modification upon natural character varies with context and may be perceived differently by different parts of the community.

3. I consider the DoC definition is in error in referring only to natural elements in the introductory sentence:

Natural character is the term used to describe the natural elements of all coastal environments.

4. Rather than adopt the DoC definition, which I understand has yet to receive explicit endorsement through the Court, I regard the following definition as being particularly robust:

Natural character is the expression of natural elements, natural patterns and natural processes in the landscape or coastal environment, rated according to the perceived degree of modification through human agency²⁰.

5. Some current methods for the assessment of natural character refer to two approaches to the concept; one approach bases assessments on what is termed 'ecological naturalness', while the other addresses 'landscape naturalness', or what is also termed 'perceived naturalness'. These two approaches, which are generally combined in natural character assessments as if they investigate the same concept, reveal a misunderstanding as to the nature of natural character. *All* natural character is perceived, by definition, and thus the assessment of perceived naturalness (more correctly, natural character) is the only valid approach to investigating the phenomenon. What must be considered is the question of whose perceptions matter. All perceptions are influenced by prior knowledge and understanding, and thus some perceptions of natural character may be regarded as more reliable or trustworthy than others.
6. Further, natural character is a condition rather than a quality or value. RMA s6(a) establishes the value of natural character - its preservation within the coastal environment is a matter of national interest. The role of the assessor is to determine how much, or how little of the phenomenon is evident in a given coastal environmental context. The material 'stuff' of natural character exists regardless of experiential or perceived attributes - these are

²⁰ 'modification' or 'intervention' could be used as an alternative to 'agency'.

the added dimensions that the observer brings to the assessment. The primary determinants of natural character are biophysical, and relate to the perception of natural elements, patterns and processes, and the extent to which human intervention has modified these factors. What are sometimes referred to as ‘experiential’ or perceptual aspects of natural character can all be understood with reference to natural elements, natural patterns and natural processes. While Policy 13(2)(a)-(h) of the NZ Coastal Policy Statement introduces a range of more specific factors for consideration, in my opinion these are consistent with the definition I have stated, and the reference to elements, patterns and processes.

7. My definition refers to the potential to rate levels of natural character within the landscape or coastal environment, according to the perceived degree of modification through human agency. Natural character ratings can be undertaken with respect to an ordinal scale, whereby different landscapes, or different sections of the coastal environment can be located within different ranges of the scale, according to whether they display more or less of the phenomenon of natural character. A scale of natural character endorsed by the Environment Court is presented in Figure 1, below. Figure 2 interprets this scale with respect to NZCPS Policies 13(1)(a) and 13(1)(b)



Figure 1: 7-range scale of natural character for the assessment of the degree of natural character exhibited by a landscape or the coastal environment. The Moderate-High, High and Very High ranges of the scale (shaded) are regarded as that part of the scale within which landscapes may be considered ‘natural’ landscapes or natural features for s6(b) and NZCPS Policy 15 purposes.

NZCPS 13(1)(a) applies	NZCPS 13(1)(b) applies						
OUTSTANDING NATURAL CHARACTER	VERY HIGH	HIGH	MODERATE-HIGH	MODERATE	MODERATE-LOW	LOW	VERY LOW

Figure 2: Outstanding natural character may be understood as natural character assessed as being at the extreme end of the Very High range of the scale, i.e. natural character approaching ‘pristine’ levels. It is generally accepted that pristine natural character, in the narrowest sense of the term, no longer exists, as all environments in NZ are to a degree, influenced by human agency.

8. This scale of natural character was endorsed by the Environment Court in paragraph [93] of its decision in *High Country Rosehip Orchards Ltd v Mackenzie District Council*²¹.
9. I consider the threshold of natural character required for RMA s6(b) and NZCPS Policy 15 assessments lies between Moderate and Moderate-High on this scale. This is the point at which natural processes become dominant over cultural processes within the landscape. Expressions of natural character within the shaded range of the scale may be regarded as not necessarily natural landscapes (in the strict, pristine or unmodified sense of the term), but ‘natural enough’ for consideration as outstanding natural features and landscapes (ONFL).
10. For this scale to be used in the field, it is necessary to identify and observe objective indicators that are indicative of different levels of natural character along the scale. These indicators generally relate to visible evidence as to levels of human intervention or management evident in a landscape, and the extent to which interventions have modified natural elements, natural patterns and natural processes within both the terrestrial and marine environments. This is consistent with the notion that ‘landscape naturalness’ (as distinct from ‘ecological naturalness’) is a perceptually determined

²¹ Decision No [2011] NZEnvC 387, at paragraph [93]

phenomenon, as distinct from a concept based upon empirical investigations (ecological naturalness).

11. While it has been my practice to apply this 7-range scale to the assessment of the natural character of the coastal environment, it may be the case that the marine component of the coastal environment should more usefully be assessed with reference to a 5-range scale. I regard this as a matter for marine scientists to determine.
12. Policy 13(2)(a)-(h) appears to widen the scope of factors to be considered in the assessment of the natural character of the coastal environment, beyond the consideration of natural elements, natural patterns and natural processes, stating that it: "...may include matters such as:

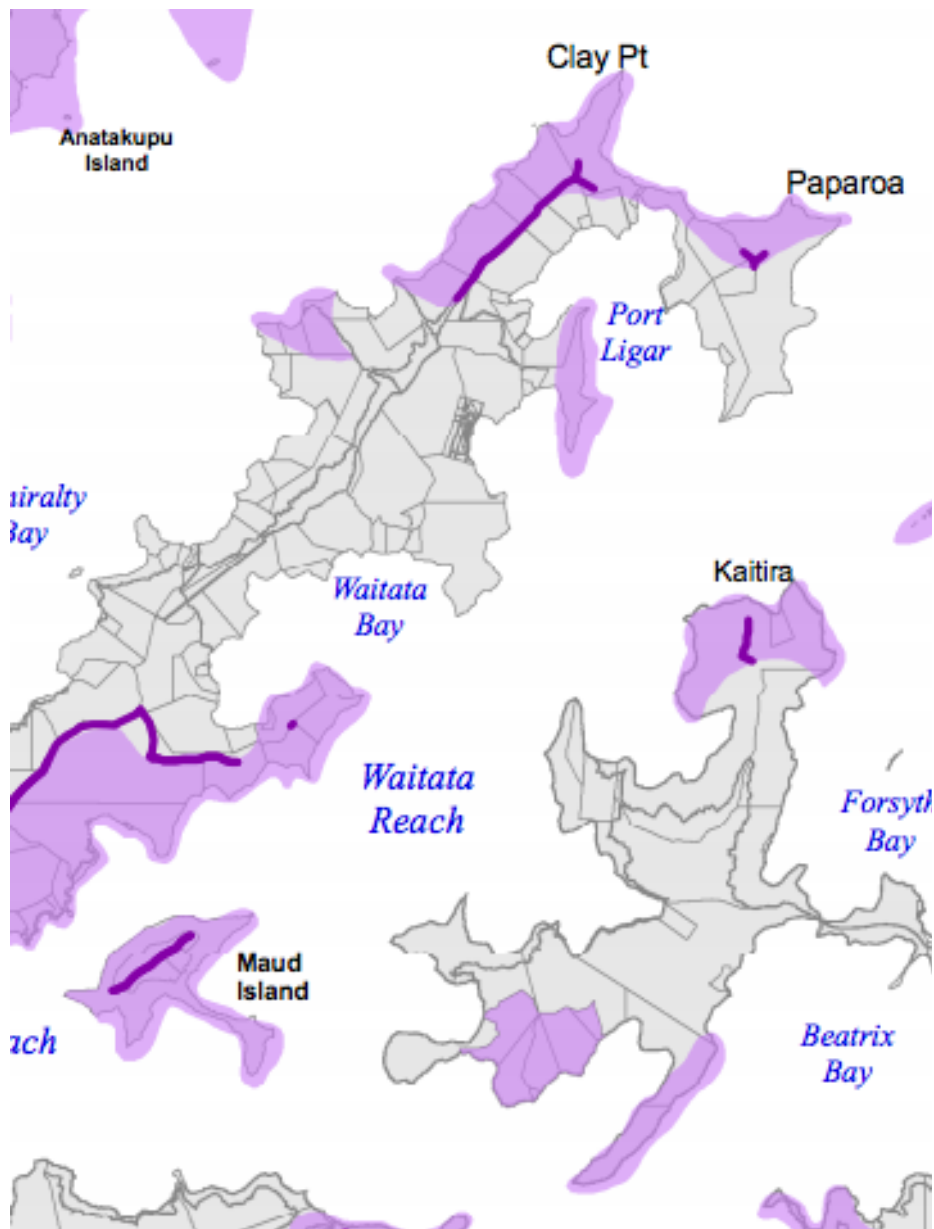
- (a) natural elements, processes and patterns;*
- (b) biophysical, ecological, geological and geomorphological aspects;*
- (c) natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;*
- (d) the natural movement of water and sediment;*
- (e) the natural darkness of the night sky;*
- (f) places or areas that are wild or scenic;*
- (g) a range of natural character from pristine to modified; and*
- (h) experiential attributes, including the sounds and smell of the sea; and their context or setting.*

13. In my opinion, these factors are entirely consistent with the definition of natural character I propose. However, some interpretation is required:

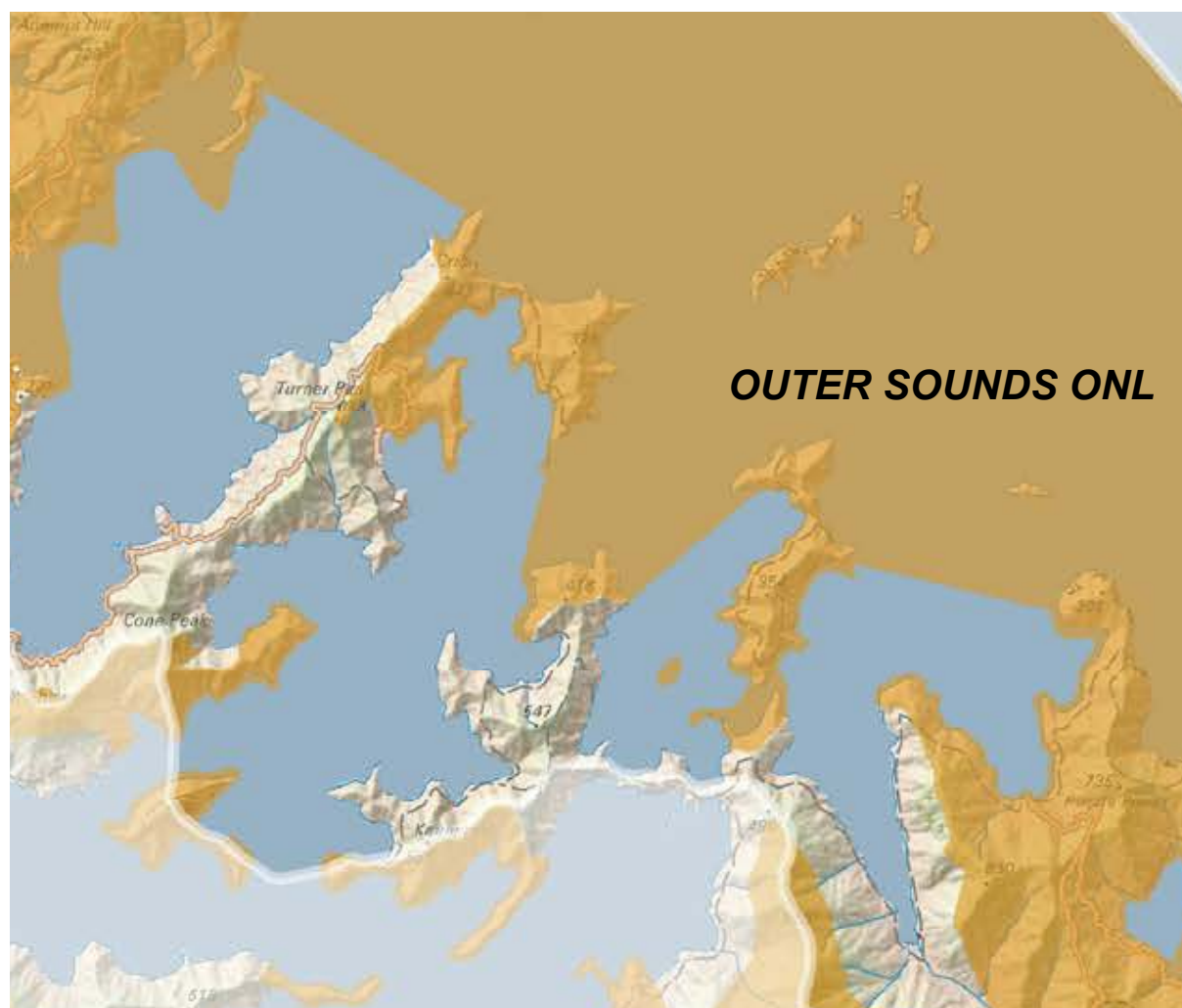
- 13.1. (a) is the the most relevant factor, in my opinion, and is consistent with the widely adopted definition of natural character I apply.
- 13.2. the factors given in (b) are examples of (a) - natural elements, natural patterns and natural processes.
- 13.3. the factors given in (c) are further examples of (a) - natural elements, natural patterns and natural processes.

- 13.4. (d) is an example of natural processes.
 - 13.5. (e) and (f) are functions of the extent of human modification to the coastal environment, which again, relates to the definition I apply.
 - 13.6. (g) refers to the application of a scale of natural character, such as introduced above.
 - 13.7. (h) is a factor that I have some difficulty with, given that the sounds and smell of the sea could be regarded as ubiquitous characteristics of any coastal environment, regardless of its level of natural character. Factor (h) is not a reliable indicator of levels of natural character, in my opinion but is more appropriately applied to assessing the inland extent of the coastal environment.
14. In light of these comments I consider it sufficient to investigate the natural character of the coastal environment with respect to the expression of natural elements, natural patterns and natural processes, and the extent to which these have been modified by human intervention.

**APPENDIX C: ENLARGED SECTION OF LANDSCAPE MAP 74 (MSRMP)
SHOWING AREAS OF OUTSTANDING LANDSCAPE VALUE, VICINITY OF
WAITATA REACH**

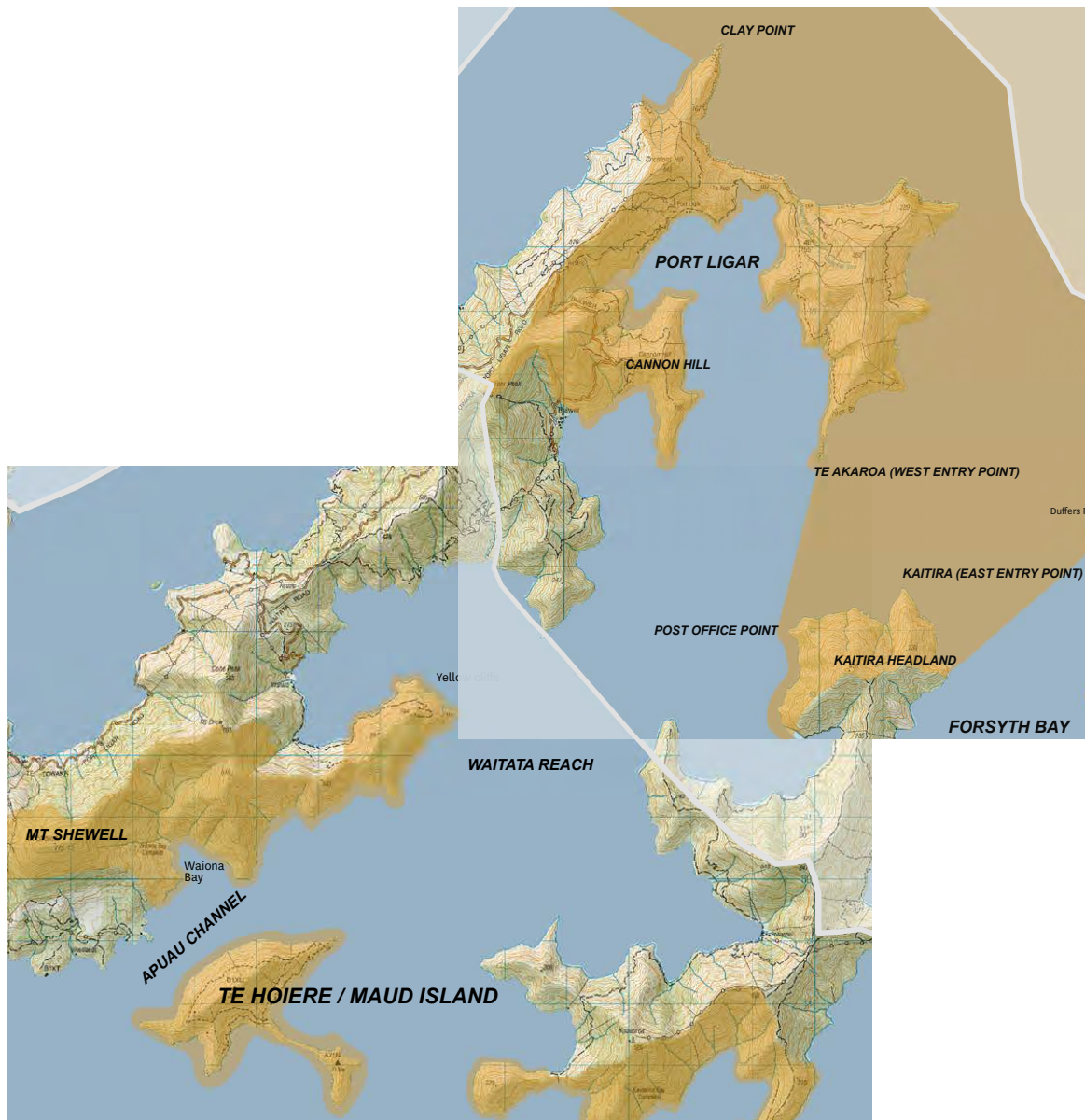


An element of arbitrariness is apparent in the definition of areas of outstanding value (purple). There is no explanation given as to why areas of sea between outstanding landscapes are not consistently shown as outstanding - compare Tennyson Inlet landscape (previous map) with the sea (Apuau Channel) between Maud Island and the mainland.

APPENDIX D: PART OF AREA 1, OUTER SOUNDS ONL (BOFFA MISKELL 2015)

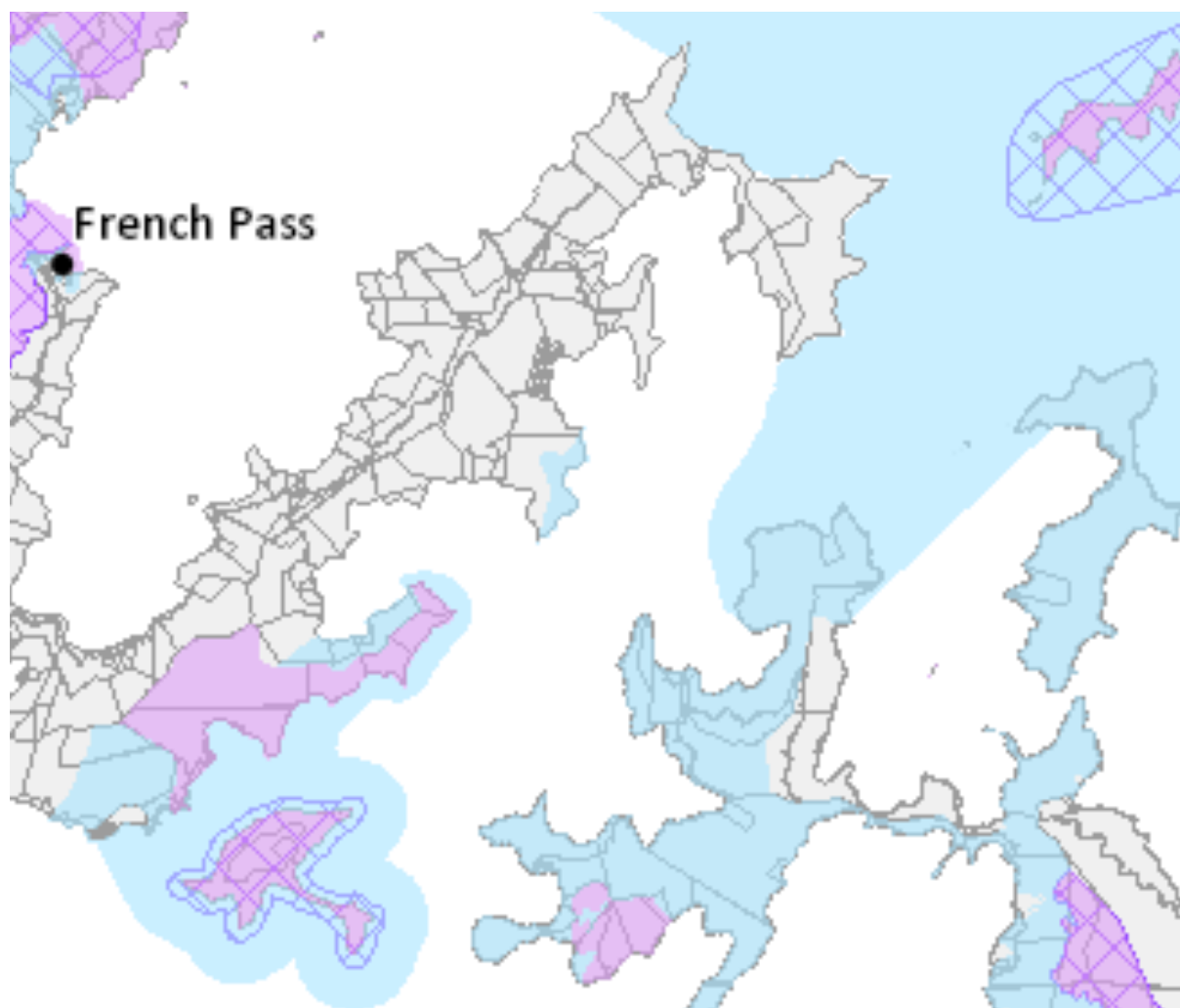
Part of map showing extent of Area 1, Outer Sounds ONL. (Source: *Marlborough Landscape Study* (2015) Boffa Miskell Ltd. pp108-109)

APPENDIX D: COMBINED PARTS MAP 5 (BOFFA MISKELL 2015) PORT LIGAR, FORSYTH ISLAND AND KAITIRA HEADLAND ONF AND MAP 6: MAUD ISLAND, MT SHEWELL, FITZROY BAY, AND EASTERN TAWHITINUI REACH ONF



(Source: Source: *Marlborough Landscape Study* (2015) Boffa Miskell Ltd. pp117 & 119)

APPENDIX E: PROPOSED MEP COASTAL NATURAL CHARACTER IN LOCALITY OF WAITATA REACH.



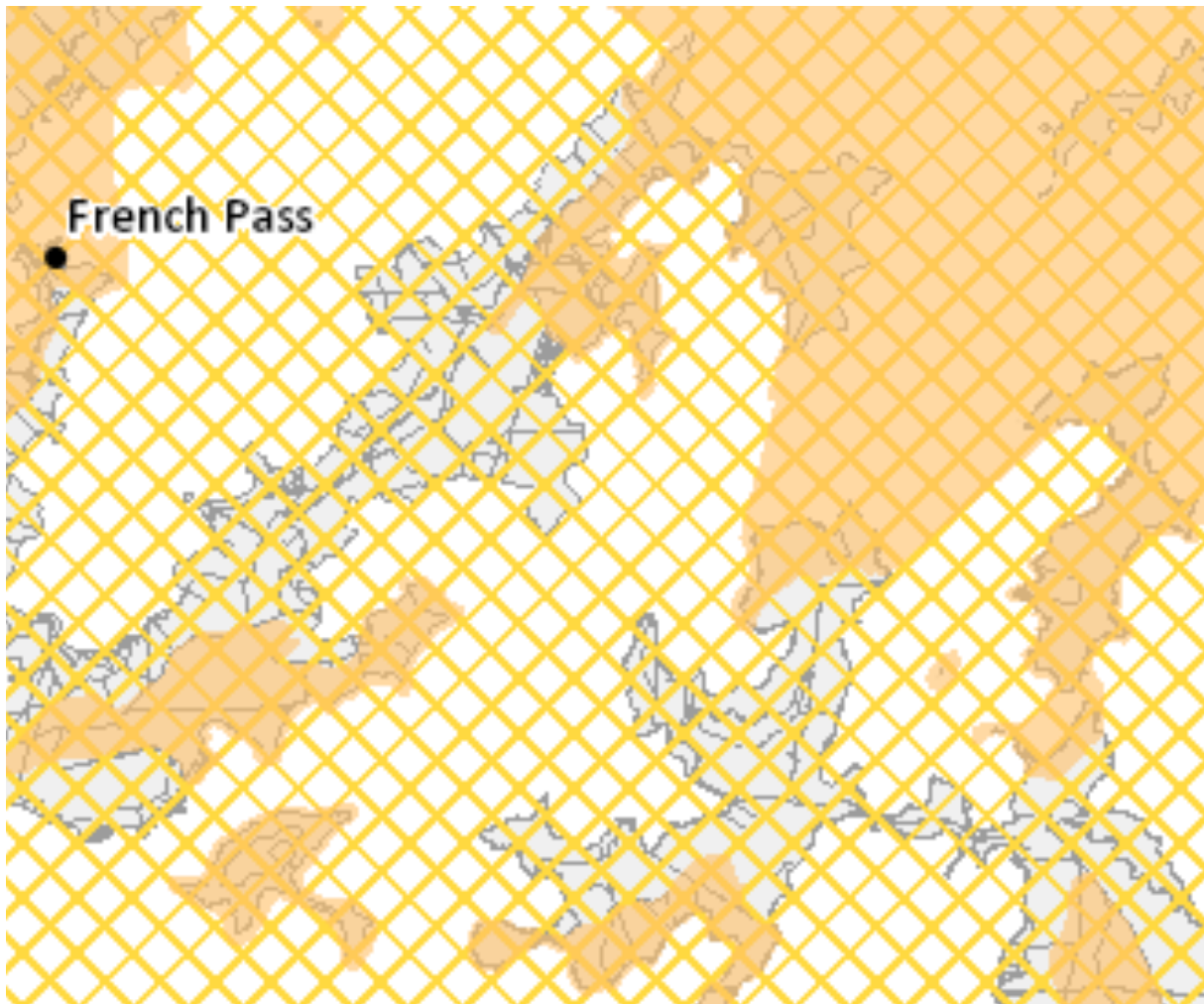
COASTAL NATURAL CHARACTER LEGEND

Blue - High

Pink - Very High

Hatched - Outstanding natural character

APPENDIX F: PROPOSED MEP ONFL AND HIGH AMENITY LANDSCAPE IN LOCALITY OF WAITATA REACH



LEGEND

Outstanding Natural Features and Landscapes (ONFL) - Orange
High Amenity Landscape (HAL) - Hatched

**ATTACHMENT: PROPOSED MARLBOROUGH ENVIRONMENT PLAN - REVIEW
OF LANDSCAPE & NATURAL CHARACTER CHAPTERS, LANDSCAPE AND
NATURAL CHARACTER OVERLAYS, & BOFFA MISKELL LTD LANDSCAPE &
NATURAL CHARACTER STUDIES**

Appendix 3

Assessment of Claimed Economic Benefits

Review and Associated Peer Review

26 March 2017

The President
Kenepuru and Central Sounds Residents' Association Inc
Kenepuru Road
Marlborough

Dear Sir

NZ King Salmon Relocation Proposal

You have requested that we undertake a review of the economic aspects of a proposal to relocate six salmon farms within the Marlborough Sounds.

1. Summary

1.1 In summary, we report as follows:

- We calculate the net annual economic benefit of the relocation proposal, in the context of a cost-benefit analysis of the proposal, at **\$6.9M** per annum. This is insignificant to a combined Nelson Marlborough regional economy with a GDP of \$4.5b per annum.
- The PwC Economic Impact Assessment gives a 'value add' or 'GDP' figure of **\$43M** per annum from the relocation proposal. This does not account for the opportunity cost of regional labour and capital used by the relocation proposal. As such it does not represent the net economic benefit to the region of the relocation proposal.
- Returns from labour (or FTE's) are fully captured and accounted for in GDP and net economic benefit calculations. It is double counting to refer to both GDP *and* the number of FTE's of a proposal when presenting economic benefits.
- The relocation of the salmon farms is not needed to ensure the commercial viability of the New Zealand King Salmon ('NZKS') operations in the Marlborough Sounds.

- A *one-off* net economic regional benefit of \$1.7M might arise from the construction of six new farms. This is immaterial to the regions.

2. Information Sources

2.1 In producing this report we have used information, taken at face value, from the following sources:

- The NZKS financial statements to 30 June 2016 as filed with the Ministry of Business Innovation and Employment (Companies Office) on 29th September 2016 ('NZKS FS'); and
- The report by PwC dated November 2016 addressed to the Ministry of Primary Industries entitled *Marlborough Salmon Relocation – Economic Impact Assessment* ('EIA'); and
- The report by EY dated November 2016 entitled *Marlborough Salmon Relocation Economic Impact Assessment Peer Review* ('EIA PR'); and
- The report dated 23 September 2016 entitled *New Zealand King Salmon Product Disclosure Statement Initial Public Offering of Ordinary Shares in New Zealand King Salmon Investments Limited* ('PDS'); and
- Information publicly available from Statistics New Zealand ('Stats NZ').

3. GDP vs Net Economic Benefits

- 3.1 This report is about understanding the economic benefit of a proposed relocation of six salmon farms (the benefit) so that this benefit can be assessed against the potential adverse environmental effects (the costs).
- 3.2 Fundamental to this is an understanding of what a net economic benefit actually is. It is the degree to which people create more value output from their limited resources. Moreover, in this particular case we are only looking at the net economic benefit to the Nelson and Marlborough regions.
- 3.3 We deliberately refer to 'net economic benefit' rather than 'value add' or 'GDP' as referred to in the EIA. This is because there is a very important and fundamental difference. The 'value add' or 'GDP' as calculated in the EIA is not actually a measure of 'economic benefit' to the regions at all. The EIA 'value add' or 'GDP' simply reports the level of economic activity that the relocated salmon farms will entail¹.
- 3.4 To use an analogy, a farmer switches some paddocks from cropping to grazing. The 'value add' or 'GDP' (as per the EIA) simply tells the farmer how much he is now making *from*

¹ A 2015 report by the New Zealand Institute of Economic Research to the Marine Farming Association Inc, at paragraph 3.1, dismisses the use of this type of GDP or 'Input/Output' methodology on the following basis: "Multiplier methodologies typically over-state economic impact estimates because they assume that economic resources such as land, labour and capital inputs are infinitely available, are never idle or can be reallocated without adjustment costs."

grazing. The net economic benefit, on the other hand, tells the farmer how much *more* he is making as a result of switching from cropping to grazing.

- 3.5 This difference is fundamentally important because an economy, like a farmer, works with limited resources – being labour and capital. New Zealand has a mature economy and as such it cannot be assumed that resources are just sitting around unused or idle. This means that moving resources from one activity to another has an opportunity cost. It is the loss of what the economy was otherwise making from those resources before they were switched to the new activity.
- 3.6 The ‘value add’ or ‘GDP’ in the EIA tells us what the region will make *from the relocated salmon farms*. It does *not* tell us what the opportunity cost is of switching limited resources of the region over to the relocated salmon farming activity.
- 3.7 In the context of balancing costs and benefits under the Resource Management Act 1991 (‘RMA’) a decision on whether to engage limited resources in an environmentally exploitive activity can only be made with an understanding of the *net economic benefit* to the community of switching limited resources to the proposed activity.
- 3.8 As we show below, the net economic benefit to the region of the salmon farming proposal is only a fraction of the \$43M in ‘value add’ or ‘GDP’ as reported in the EIA.

4 GDP and FTE’s

- 4.1 There is another fundamental matter that we take issue with in the EIA. It is the reporting of the number of jobs (called FTE’s) that will be ‘generated’ by the proposed activity as being an ‘economic benefit’ of the proposal.
- 4.2 There are two problems with this.
- 4.3 Firstly, it is important to appreciate that the ‘value add’ or ‘GDP’ and the FTE’s as reported in the EIA are *not* additive economic impacts. This is because all of the wages, salaries and other returns from labour engaged in the relocated salmon farm activity are included in the ‘value add’ or ‘GDP’ figures produced by the EIA. As such, it is incorrect, if not misleading, to suggest that the proposal has ‘value add’ or ‘GDP’ of \$X and FTE of X number as the EIA might imply². Rather, the ‘value add’ or ‘GDP’ (as calculated in the EIA) includes the labour returns from the FTE’s.
- 4.4 Secondly, the fact that a proposal will engage labour, or require X ‘FTE’s’, does *not*, of itself, grant economic value to a proposal. If it did we would pay people to employ people. There might only be a net economic benefit from the engagement of labour *of itself* if there

² For example, pages 20 and 42 of the AIE records that the economic impact can be broken into two parts: the amount of ‘value add’ and the number of FTE’s generated.

was a long term unemployment issue in the region. There is no suggestion that this is the case in Marlborough or Nelson^{3 4}.

- 4.5 In short, the fact that there will X number of FTE's under the NZKS proposal is, of itself, irrelevant in assessing the net economic benefit of the proposal.
- 4.6 Finally, whilst the number of FTE's is irrelevant in terms of net economic benefit we do note that the EIA calculations suggest a net increase of 445 FTE's should all six relocated farms operate at maximum anticipated output under BMP.⁵ This assumes there is a direct linear relationship between FTE's and NZKS output. **This is likely to significantly over-state FTE's.** This is because many of the NZKS FTE's are engaged in overhead activities. Overhead resources are generally fixed, or are at least unlikely to increase by a significant amount as a result of an increase in the NZKS farming related activity.

5. What are the true Economic Benefits of the Proposal

- 5.1 The first step in quantifying net economic benefits is identifying where the potential economic benefits might come from. To this end there are two key economic questions to ask:
- Firstly, is the relocation necessary to ensure the commercial viability of the NZKS salmon farming operations in the Marlborough Sounds. If the answer to this is yes, then the economic benefit may be greater than just the economic benefit arising from the relocated farms themselves.
 - If relocation is *not* necessary to maintain NZKS' commercial viability, then the question becomes one of what is the economic benefit arising from the relocation proposal itself.

6. Is the relocation proposal necessary to ensure the commercial viability of the NZKS operations in the Marlborough Sounds?

- 6.1 The answer to this question can be determined from a review of the NZKS FS and the PDS.
- 6.2 Current production from the operations in the Marlborough Sounds is around 6,000 tons per annum. For the year to 30 June 2016 this produced a net profit before interest, tax, depreciation and amortisation ('EBITDA') of \$13.8M and a net profit after tax of \$2.6M.

³ We note that 1.3 in the EY PR warns that the EIA assumes there is sufficient unemployment to serve the NZKS labour demand.

⁴ The unemployment rate in the Nelson – Marlborough region is currently approximately 2.8%. This is well below the 4% - 5% unemployment rate internationally recognised as representing full employment.

⁵ Table 40 FTE's excluding Te Weka, Motukina and TipiBay is 512. Compared with 67 FTE's with the old farms operated under BMP and commercial viability assumptions – per Table 41 EIA.

This represents a before tax return on shareholder funds of around 9%⁶. This is a commercially viable return.

6.3 Going forward NZKS expects that three new resource consents acquired in 2014 will add a further 50% to its output within five years and eventually double it to around 12,000 tons of output p.a.⁷. The PDS also forecasts that by 2018 EBITDA will have almost doubled to \$26.1M with net profit after tax increasing five times to around \$14M⁸.

6.4 Importantly, these figures have been determined assuming there is no relocation of the six older farms. Moreover, there is no indication given anywhere in the PDS that the position beyond 2018 will be less favourable or jeopardised if relocation of the older farms does not occur. The following extract from the PDS is perhaps pertinent in this regard⁹:

“We estimate that these new [2014] seafarms will enable production to increase by approximately 50% in the next five years and, at full capacity, will allow us to approximately double existing production. The resulting increase in production is expected to be accompanied by a material improvement in financial performance due to higher volumes for sale, modest efficiencies from economies of scale, and a modest reduction in production costs due to improved automation and technology being adopted at new seafarms”

6.5 We have tested this statement by comparing the expected gains going forward from the new 2014 consents against any potential losses going forward from not relocating the six older salmon farms.

6.6 According to EIA the six farms at issue currently produce around 2,000 tons pa¹⁰. The EIA suggests that only one of the sites will be commercially viable under ‘Best Management Practice’ (‘BMP’)¹¹. This could result in the contribution from these six farms falling back to between 220 and 660 tons p.a.¹². Thus, if the six farms are *not* relocated output could reduce by between 1,300 and 1,700 tons pa. These losses in output would be expected to arise on or before the expiry of the resource consents on these farms, the earliest of which is 2021¹³.

6.7 Against this is the anticipated additional 3,000 tons pa arising under the new 2014 consents over the next five years¹⁴. This is approximately twice the amount of the potential loss in output that could arise through not relocating the six old farms. As such, to this point not relocating the older farms will clearly have *no* impact on the commercial viability of the NZKS operations.

⁶ From the NZKS FS

⁷ Pages 29,38 PDS

⁸ Page 59 PDS

⁹ Page 38 PDS

¹⁰ Page 58 EIA

¹¹ Otanerau. According to NKS there will also remain an economic contribution from Forsyth and Waihinaiu - namely as support sites to two of the new 2014 consents. We do not include these gains for the purpose of this particular exercise.

¹² Table 17 EIA

¹³ Ruakaka – per page 32 PDS

¹⁴ PDS pages 29,38

- 6.8 To be complete on this analysis it is appropriate to also consider the one-off losses in production that could arise from having to fallow Otanerau for up to five years (if it is not relocated) in order for it to meet BMP. This would give rise to a one-off loss of between two and five years supply from Otanerau as from 2024 – which is when its existing resource consent is due to expire¹⁵. The worst case is that this will result in a loss of 3,300 tons – being 5 years loss at 660 tons a year from 2024 through to 2029. However, over this time the three new 2014 consents will have contributed at least an additional 15,000 tons – being 5 years at 3,000 tons a year.
- 6.9 On the above analysis it is relatively clear that there is no need to relocate the six older farms in order to protect the commercial viability of the NZKS operations.

7. What Economic Benefits Arise to the Region from Relocating Anyway ?

- 7.1 If relocating is not necessary to protect the commercial viability of the NZKS operations, the question becomes one of what is the net economic benefit to the local region of relocating the six old farms anyway ?
- 7.2 In this regard the EIA report is a useful document because it calculates how much *activity* in the region will be directed toward the relocated farms (i.e. the ‘GDP’ or ‘value add’ from the relocated farm activity). From this we can determine the net economic benefit by deducting the opportunity cost of the limited regional resources that will be engaged in the relocated farm activity. The difference between the \$43M in GDP as reported in EIA and the actual net economic benefit of the relocation proposal to the region is significant – as the following paragraphs illustrate.
- 7.3 The following table shows the regional impact on GDP as compiled from the EIA:

	GDP - \$M Per Annum
GDP from the Six Farms if Relocated	49 ¹⁶
Deduct the Maximum GDP from the Six Farms if <i>Not</i> Relocated	(6) ¹⁷
Therefore Growth in NZKS GDP From Relocating	43

- 7.4 We now need to deduct from the \$43M increase in NZKS GDP the opportunity cost of the limited regional resources that will be utilised by the increase in NZKS activity.
- 7.5 To calculate opportunity cost we must firstly determine what portion of the gross \$454,955 in GDP that the EIA calculates (per 100 ton of NZKS output) is from labour resources, and what portion is from capital resources¹⁸.

¹⁵ PDS page 32

¹⁶ Table 40 EIA – excluding Tip Bay, Motukina and Te Weka

¹⁷ Table 25 EIA. This excludes any account of a one-off economic loss that could arise from an initial period of fallowing to meet BMP. This is minor in the context of sustained annual benefits.

¹⁸ Refer Table 3 on page 21 EIA. The EIA calculated GDP per 100 ton of output because of uncertainty over what the actual output of the relocated farms will be.

- 7.6 We have calculated the labour portion by taking the 4.7 FTE's given by the EIA¹⁹, allocating this labour across the various industries engaged in the NZKS process as indicated by the EIA²⁰, and then applying, as best as possible, the relative mean average labour earnings in 2016 for those industries as given by Statistics New Zealand.
- 7.7 This suggests that the annual regional GDP from labour per 100 ton of NZKS product is \$267,354. At 4.7 FTE's this gives an average return from NZKS activities of \$57K per employee.
- 7.8 The opportunity cost to the region of utilising this labour on the NZKS project is what that labour was already returning to the region *without* the NZKS relocation proposal. One theory is that an increase in labour demand at a particular skill level will ultimately ripple down to rest as an impact at the lowest skill level - being the minimum wage. However, the immediate impact of the NZKS relocation proposal will be felt in the labour market at the skill level required by the NZKS proposal and will only ripple down to the lowest skill level over a prolonged period of time.
- 7.9 As such, the opportunity cost of the 4.7 FTE's per year per 100 tons of output is calculated from the mid point between the \$267,354 return on labour per annum from the NZKS relocation proposal and a \$153,972 return per annum return on 4.7 FTE's otherwise engaged at the minimum wage. This calculates as an opportunity cost of \$210,663 per 100 ton of NZKS output. The means that the net economic benefit to the region from increased returns on labour is **\$56,691** per 100 tons of NZKS product.
- 7.10 This is shown in the following table:

Labour Resources:

Calculated Labour Content of EIA GDP per 100 Ton of Output:	\$267,354
Deduct the Opportunity Cost of Labour at the Mid-Point Between the NZKS Labour Return and the Minimum Wage	\$210,663
Net Regional Economic Benefit from Returns on Labour per 100 Ton of NZKS Output	\$56,691

- 7.11 The \$187,601 balance of the \$454,955 in GDP that arises per 100 ton of NZKS product essentially arises as returns on regionally held capital that is re-deployed over to the NZKS activities. It worth reiterating here that we are not concerned with returns on capital to NZKS shareholders. Most of this is held off shore and very little is held in the Nelson and Marlborough regions. As such NZKS shareholder returns are irrelevant²¹. The capital returns we are focused on are essentially those of the indirect and support industries to the NZKS operations that are based in the Nelson and Marlborough regions.
- 7.12 The opportunity cost of regionally held capital that is redeployed into the NZKS related activities is what that capital was already returning to the region. The market will redeploy

¹⁹ Refer page 22 EIA where it is given that each 100 tone of NZKS output supports 4.7 FTE's in the Nelson and Marlborough regions.

²⁰ Refer figure 6 page 23 EIA

²¹ This is consistent with the EIA which has also ignored returns on NZKS shareholder capital – refer page 18 EIA.

its capital into NZKS related activities if there is a marginal increase in return. In this regard it is conservatively assumed that a 10% increase in risk adjusted return will be enough to induce a switch in the deployment of regional capital over to NZKS activities²².

7.13 This means that the opportunity cost of the \$187,601 in regional GDP from capital can be estimated at \$170,546 (i.e. \$187,601/1.10).

7.14 This gives a net economic benefit to the region through higher returns on capital at **\$17,055** per 100 ton of NZKS output. This is summarised in the table below:

Capital Resources:

Balance of GDP Derived from Capital Resources ²³	\$187,601
Deduct 90% Opportunity Cost of Capital:	\$170,546
Net Economic Benefit from Improved Regional Capital Return per 100 Ton of NZKS Output	\$17,055

7.15 The following table summarises the total net economic benefit to the region from the NZKS relocation proposal properly accounting for opportunity costs:

Net Economic Benefit From Labour Resources per 100 Ton of NZKS output	\$56,691
Net Economic Benefit From Capital Resources per 100 Ton of NZKS output	\$17,055
Total Net Economic Benefit per 100 Ton of NZKS Output	\$73,746

7.16 The total net economic benefit to the region per 100 ton of NZKS output is calculated at **\$73,746**. This is 16.2% of the gross \$454,955 in GDP calculated in the EIA. That is, the opportunity cost of the NZKS GDP as calculated under the EIA is approximately **83.8%**.

7.17 The EIA returns a net increase in NZKS GDP of \$43M per annum with the relocation proposal. After deducting the opportunity cost of resources used by NZKS in the relocation proposal, the **net economic benefit** to the region of the relocation proposal is approximately **\$6.9M** (i.e. 16.2% of \$43M).

8. Salmon Farm Construction

8.1 It is important to also consider any one-off regional activity that might arise through the construction of new salmon farm structures.

8.2 The EIA calculates regional GDP of \$3.2M for each new salmon farm constructed²⁴. However, because these activities are one-off their opportunity costs are likely to be higher

²² Refer paragraphs 96-102 Brief of Evidence Timothy John Hazledine, Professor in Economics, Auckland University, per Board of Inquiry into NZKS Salmon Farm proposals 10 August 2012. Professor Hazledine suggested a 5% marginal increase in return is sufficient to induce a transfer of resources to an alternative activity.

²³ That is, \$454,955 GDP per 100 ton as per the EIA, less the \$267,354 calculated above as attributable to labour resources.

than the 83.8% calculated above for the on-going NZKS relocated activities. It is acknowledged in the EIA that these activities are in fact likely to give rise to immediate capacity issues²⁵.

8.3 As such, an opportunity cost that is calculated on the additional returns needed to immediately draw resources across to the NZKS activity is appropriate. As above, (conservatively) assuming a 10% gain in return for both labour and capital will draw these resources over to a short term NZKS activity means that the net economic gain to the region from the one-off construction activity will be around \$290,909. That is, \$3.2M – (\$3.2M/1.1). If six new farms are constructed as anticipated the total net economic gain to the regions will be a *one off* benefit totalling \$1.7M.

8.4 A *one-off* net economic benefit of \$1.7M to the regions is immaterial.

We trust this assists with your understanding of the economic analysis of the NZKS proposals.

Yours sincerely
Offen Advisors Ltd

A handwritten signature in black ink, appearing to read 'Trevor Offen', with a stylized flourish at the end.

Trevor Offen
Principal

²⁴ Page 26

²⁵ Page 27



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26 March 2017

Andrew Caddie
Vice President
Kenepuru and Central Sounds Residents Association
Email: [andrew.caddie @xtra.co.nz](mailto:andrew.caddie@xtra.co.nz)

Dear Andrew

You have asked me to review the economic analysis in the letter from Mr Trevor Offen of Offen Advisors Limited on the King Salmon farm relocation proposal.

My comments are as follows:

- The conclusion that the PWC Economic Impact Assessment overstates the economic benefit to the Nelson/Marlborough region because it does not take account of the opportunity cost of labour and capital inputs into the project is sound.
- The argument that the increase in employment is not an additional economic benefit because it is already captured in the assessment of the economic benefits is sound.
- The assessment of the economic viability of the business looks to be reasonable given the information that was reviewed.
- The letter provides an alternative estimate of the net annual economic benefits. We understand that the intention here was to provide an 'order of magnitude' estimate of the benefits, using the limited information set from the PWC report. As such it does not attempt to identify and quantify every

possible economic impact of the relocation proposal. It focuses on two main impacts:

(1) Enhanced returns to labour. The methodology of taking a mid-point between the minimum wage and average earnings is reasonable.

(2) Enhanced returns to capital. The relevant economic benefit here is the return to capital that is additional to the return to a comparably risky investment. The assumption of a margin of 10 percent is a judgment, which in my view is reasonable.

- It is reasonable to ignore the impact of the benefit from of the capital spending, because the figure is low and capital spending is a one-off event. If it were apportioned over the life of the project it would make little difference to the assessed annual economic benefit of \$6 million.

Ian Harrison
Principal Tailrisk Economics

About Tailrisk economics

Tailrisk economics is a Wellington economics consultancy. It specialises in the economics of low probability, high impact events including financial crises and natural disasters. Tailrisk economics also provides consulting services on:

- The economics of financial regulation
- Advanced capital adequacy modelling
- Stress testing for large and small financial institutions
- Regulatory compliance for financial institutions
- General economics.

Principal Ian Harrison (B.C.A. Hons. V.U.W., Master of Public Policy SAIS Johns Hopkins) has worked with the Reserve Bank of New Zealand, the World Bank, the International Monetary Fund, the Bank for International Settlements and a number of New Zealand banks. He has recently made contributions to public policy debates in a number of areas including: seismic strengthening, workplace safety, immigration and financial system prudential policy.

Appendix 4

KCSRA Review of Disease Issues

Review of Disease issues of the Proposal to create up to Five New Salmon farms in the Waitata Reach of the Marlborough Sounds.

Introduction

1. The Minister of Aquaculture and the Ministry of Primary Industries (**MPI**) are proposing (Proposal) to effect by way of executive order a plan change to the Marlborough District Council (**MDC**). This is to allow up to six new NZKS salmon farms to be located in areas currently prohibited for salmon farming. Five of these farms are of particular interest to the Kenepuru and Central Sounds Residents' Association (**KCSRA**) being located in the Pelorus Sound /Waitata Reach area.
2. KCSRA opposes the Proposal, and for the purpose of this aspect of our submission, on the grounds that it will increase the risk of disease pathogens becoming established, increase the risk of unusual mortality events and significantly enhance disease risk in already struggling nearby scallop beds¹.
3. Among the material prepared or commissioned by MPI in support of this Proposal are reports on the likes of Disease risk and Biosecurity risk. In this submission we review some of that material and provide some suggested direction and comment for the Panel as to its credibility or lack thereof.
4. We appreciate that whilst the authors of this review hold a science based degree, a law degree and a degree in electrical engineering between them we are not, on the face of it, experts in the field. Accordingly, we first spend a little time setting out the hard way we and KCSRA has accumulated a deeper understanding of the issues around disease risks when farming salmon in the Sounds and why this Proposal is fundamentally flawed.
5. The structure of this review is as follows:
 - A brief review of our involvement in the 2012 BOI and using that process to come to grips with the 2012 unusual mortality event at the NZKS Waihinu Farm
 - KCSRA's attempts to follow up from the BOI and what we learnt from that process and the next steps undertaken by KCSRA.
 - The KCSRA Research Paper and significant findings around temperature and the subsequent on going unusual mortality events.
 - The MSGW experience.
 - Review of Dr Diggles latest report and discussion of its weaknesses.
 - Conclusions and recommendations.

¹ MPI final report on Scallop Health - Diseases in NZ to mid 2015

What we learnt from the Board of Inquiry

6. As noted in the body of this submission in 2012 New Zealand King Salmon (**NZKS**) sought a private plan change by way of a Resource Management Act Board of Inquiry (BOI) process. The intent was to obtain up to nine new farms in the Sounds, eight of which were in areas then prohibited for salmon Farming. The Association strenuously opposed that proposal. At the end of that process and the subsequent Supreme Court decision, NZKS was awarded three new farms, two in the Pelorus Sound/Waitata Reach area.
7. In the course of the BOI process KCSRA became aware of a significant 2012 mortality event at one of the NZKS farms in the Pelorus – Waihinu.
8. Understandably, KCSRA was concerned at the reputational risk to the Sounds. That is terms of it being associated with large farmed fish mortality events and the risk of this being enhanced as a result of the ramped up NZKS proposals. We were also nervous about the disease risk spilling over into other areas or other species.
9. The BOI was constituted as a decision making Board and accordingly cross examination of NZKS experts witness providing evidence on areas such as disease and biosecurity risks was permitted. KCSRA took the opportunity to make inquiries as to the extent, nature and likely cause of the unusual mortality event.
10. This proved a difficult exercise with the majority of the appropriate NZKS expert witnesses agreeing they may have heard of the event but otherwise professing to know little or nothing about the event. One NZKS witness – a Dr Diggles (a scientist specialising in parasitology of fish) – knew a little more about the event but was keen to leave it on the basis that the MPI investigation had shown it was not due to an infective disease agent. In short he did not see any real increase in disease risks from the BOI proposal.
11. However, another expert witness's (Dr Krkosek) a marine ecologist with expertise in population dynamics and epidemiology) retained by Sustain our Sounds was not so sanguine. He warned of the risk of reaching a tipping point in the pathogens already present in the Sounds as salmon farming increased. He also cautioned about the increasing risk of cross infection as the number of salmon farms in the Waitata Reach increased given their close proximity².
12. Contemporaneously KCSRA also sought answers as to the cause and extent of the mortality spike from the bio-security regulator – the Ministry for Primary industries (MPI) via the Official Information Act (OIA). Answers to a number of our requests were declined by MPI. KCSRA had sought to drill into the MPI investigation but MPI chose to heavily redact the key interim report.

2 See the hearing transcript from the BOI of the evidence of Dr Krkosek on 20 September page 2167.

What Happened Post the Board of Inquiry

13. Post the BOI hearings we continued to seek the redacted information via a complaint to the Ombudsmen. In due course nearly a year later that report was released most of the redacted information revealed. Although it would have been useful to have received that to assist with cross-examination of the likes of Dr Diggles, events had moved on.
14. In 2015 the media reported another mass mortality event. Again at the NZKS Waihinau farm in the Pelorus. Again very little concrete information/analysis was supplied to the general public by MPI. Again KCSRA sent OIA requests to MPI, trying to find out what was going on, and if this was going to become the new norm. Again, “commercial sensitivity” was cited as a reason to withhold information.
15. Given this background and the interest shown by some members, KCSRA formed a small working group to carry out our own research and analysis to get an understanding of the root causes of NZKS salmon dying en masse in the Marlborough Sounds on a regular basis. The efforts of this group led to the KCSRA Research Paper. This can be viewed on our web site www.kcsra.org.nz, click on the folder “Public Documents” and then Salmon Mortality. We note that in producing the KCSRA Research Paper we discussed the penultimate draft with both MPI Biosecurity and industry including NZKS representatives.

Some of the KCSRA Findings

16. In short, farming salmon (Chinook, also known as King, Salmon, in particular) is not easy being high maintenance and requiring very specific particular conditions in order to be able to be farmed efficiently. For the BOI process, NZKS presented a large number of documents, some dealing with the technical aspects of successfully farming Chinook or King Salmon³. The excerpt below is from NZKS’s Mark Gillard’s Site Selection and Consultation Document⁴.

“Key matters for consideration in selecting possible salmon farm sites

20. *Based on my experience, there are two overarching critical matters to consider in determining whether it is feasible to farm salmon productively:*
 - a. *The **first critical matters** are the key appraisals of the physical characteristic required for salmon to successfully grow (rather than perform poorly or possibly die). These are primarily:*
 - i. **Water temperature** - salmon prefer cooler waters and usually grow best in water temperatures between approximately 12 to 17 °C;
 - ii. **Water depth** - which preferably should be at least 30 metres and ideally 40 metres or more;

3 Details of the Board of Inquiry, including written evidence and transcripts of the hearings, may be accessed at:

<http://www.epa.govt.nz/Resource-management/previous/king-salmon/Pages/default.aspx>

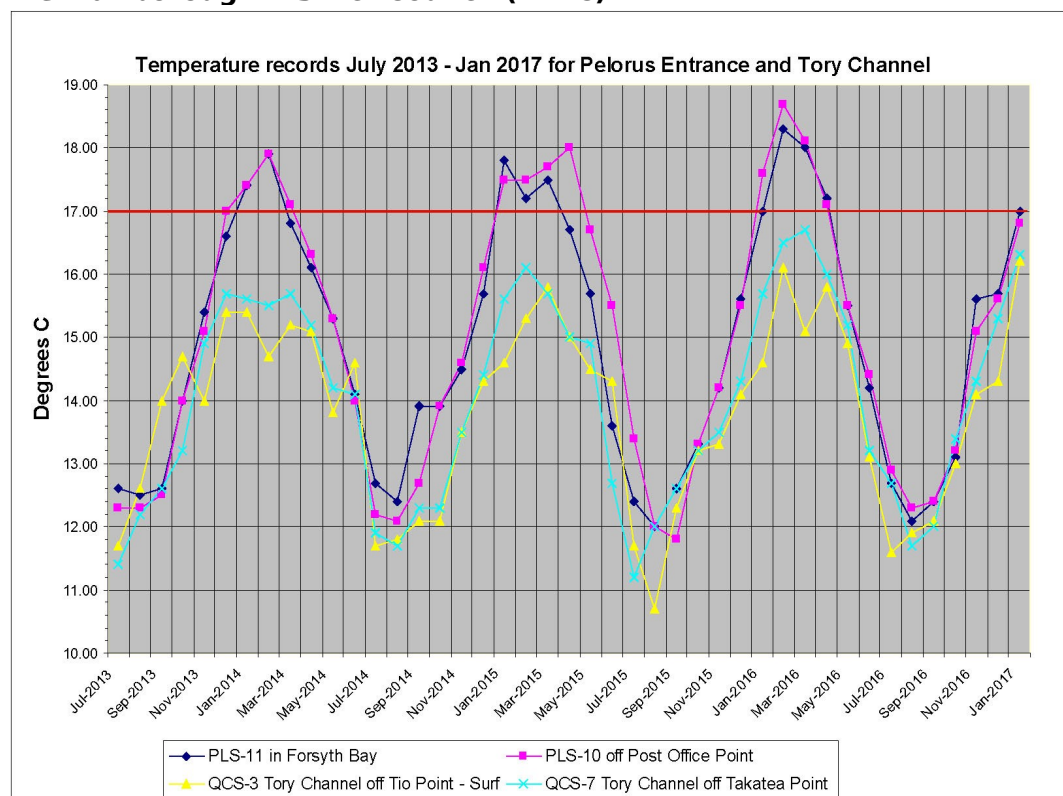
4 <http://www.epa.govt.nz/Resource-management/previous/king-salmon/evidence/Pages/Corporate-and-consultation-evidence.aspx>

- iii. **High current** - it is generally preferable to grow salmon in areas of high current. Water depth and current can impact on temperature, but are also important in terms of "flushing" by-products from the farm area. It is not an exact science. For example, some warm sites that are at the marginal temperature of 17 °C (or even just over in the summer), can be managed if they are for example stocked at times to avoid warm temperatures especially with smolt during their first year in seawater. **Our existing site at Waihinau Bay falls into this category. Although we have farmed this site for over 20 years, we do still experience difficulties with our autumn mortality event**

17. We agree with Mr Gillard that a key component of what makes up the mix of a good site is water temperature. We have been monitoring water temperature using MDC data for some time and note the graph below:

Temperature Records

Figure 1 The chart below shows recent temperature measurements done by the Marlborough District Council (MDC)⁵



18. What becomes immediately obvious from the graph is that in the Pelorus sound MDC monitoring sites water temperatures are at or above 17°C for long periods (months). We stress that the Post Office point monitoring station is very close to the proposed Waitata Reach Mid Channel farm site. We understand from MDC that the sensors are located at

5 Map of the coastal monitoring sites

http://www.marlborough.govt.nz/Environment/Coastal/Monitoring-Research/~media/Files/MDC/Home/Environment/Coastal/MDC_Monthly_Monitoring_Locations_Marlborough.pdf

depth of 1 metre from the surface. NZKS asserted at the MSWG that at the farm cage level water temperatures could well be lower, but have yet to substantiate that assertion. This also contradicts temperature data Mr Gillard produced at the BOI but in any event NIWA data we have seen suggest that there is no significant temperature gradient at the relevant operating depths⁶.

19. We also became aware that the 2012 and 2015 unusual mortality events were not the full story as to the occurrence of these events. Indeed there seem reasonable grounds to believe that there were significant mortality events in 2013 and 2014 in the Pelorus⁷. Over this period we continued to seek more detailed information from the Biosecurity arm of MPI. We also questioned their commitment to maintaining a more rigorous degree of oversight over the operations of NZKS and getting to the bottom of the reasons behind these significant mortality events.
20. Following a meeting called by MPI Biosecurity we agreed to better lines of communication and a KCSRA member agreed to become a biosecurity liaison person. Nevertheless MPI (and NZKS) have consistently and steadfastly refused to identify those farms affected by these unusual mortality events on the grounds of commercial sensitivity. From careful examination of public records it seems clear that they are at least the Waihinau and Forsyth Farms and we strongly suspect also Otanerau in Queen Charlotte Sound.
21. To be fair to the Biosecurity arm of MPI it emerged that they were continuing to try and find the causes of these unusual mortality events and were obviously not convinced it was due to the likes of passing swarms of jelly fish or transient algae blooms⁸. No doubt the scale of the 2015 unusual mortality event redoubled their efforts.
22. In October 2015 MPI Biosecurity announced two bacterial pathogens had been isolated in samples taken from dead NZKS salmon. MPI Biosecurity had the wit to keep samples from 2012 and these too showed the presence of a Rickettsia-like organism. Sad to say, and as Dr Krkoesk had predicted, this had **not been** seen before in salmon in New Zealand and was not in Dr. Diggles list of known salmon diseases in New Zealand in his 2011 report for the BOI.
23. In May 2015, we understand that smolts (very young salmon) were introduced into the Forsyth farm. MDC records state that early January 2016, the Forsyth farm structure was towed with the young salmon to the new Waitata farm location. This seems a high-risk management strategy.
24. In any event in April 2016 MPI Biosecurity issued a Controlled Area Notice (CAN) pursuant to section 131 of the Biosecurity Act 1993. The CAN was issued in order to,

6

<http://www.marlborough.govt.nz/Environment/Coastal/~media/Files/MDC/Home/Environment/Coastal/SoundsWQMonitoringResults20142015.pdf>

7 See the 2013 Global Salmon Initiative report re world wide mortality statistics. See page 61 of the NZKS Investment Statement disclosing insurance receipts for Waihinau and Forsyth mortality events. Interestingly this and the 2015 mortality event are classified as “one off or infrequent” events.

8 See paragraph 481 of the BOI decision.

among other things, protect areas in New Zealand at risk from an incursion of NZ Rickettsia like organisms and minimise damage caused to NZ salmon populations by NZ Rickettsia.

25. The CAN placed certain movement and other controls in defined areas of the Marlborough Sounds. At writing the CAN is still in place. For whatever reason(s), and we can only speculate, MPI Biosecurity's stance is that although the pathogens are present in dead fish it has yet to be clearly demonstrated that the direct cause of death is due to, say, New Zealand Rickettsia Like Organisms (**NZ RLO**).

Just Bad Sites and Poor Management Practices?

26. As can be seen from the KCSRA Research Paper we carefully considered the line of argument that (despite all the glossy words to the contrary) NZKS had just chosen bad sites. **It is submitted** that the Sounds and in particular the Pelorus /Waitata Reach areas **are marginal** for salmon farming on the basis of consistently high proven water temperatures. Anywhere in this area **it is submitted** is at risk of unusual mortality events. **We submit** that the location issue is exacerbated by poor management practices and lax regulatory oversight.
27. Unfortunately the requirements of the resource consents that NZKS is required to operate its older farms under are minimal. Thus, **it is submitted**, there is a clear economic incentive for NZKS to maximise production and take the risk of disease or unusual mortality outbreaks. **It is submitted**, that it seems extraordinary that the prime regulator, MDC, feels its hands are tied and so long as there is technical compliance there is little they can, or indeed want to do, such as to look to change the consent conditions or issue an abatement notice, until the permits run their term.
28. **It is submitted** that this has led to the following examples of poor (and disease high risk practices) NZKS management practices among the older farms as normal: **Fallowing**: NZKS does not, **it is submitted**, fallow its sites for short periods to break disease cycles. Not even when mass mortalities occur year after year, such as at Waihinau in 2012, 2014, 2015. **Single Year Class**: NZKS does not farm its farms with single year classes. Pathogens, **it is submitted**, will be passed on from older fish to the new smolts, as soon as they arrive in the farm. NZKS still does not practice it, even though disease is an issue⁹. We note that even Dr Diggles in his report (page 46) notes that the current NZKS biosecurity plan does not address this.
29. A 2013 NIWA Report on international regulations regarding salmon farming noted¹⁰
"New Zealand is the only country that does not have legislated aquaculture monitoring requirements and regulations on permitted environmental standards. Creation of aquaculture regulations is likely to remove inconsistencies in environmental standards and enable better enforcement of environmental standards"

9 MPI Biosecurity Response: "UNUSUAL MORTALITY RATES IN MARLBOROUGH FARMED SALMON", October 2015.

10 Comparison of the international regulations and best management practices for marine finfish farming

Carina Sim-Smith and Andrew Forsythe, National Institute of Water & Atmospheric Research Ltd, October 2013. MPI Technical Paper No: 2013/47

30. It is true that a concerted effort from MDC (and community representatives such as Mr Rob Schuckard) has led to the development of guides to best management practices for salmon in the Sounds. This is a good start although it primarily focuses on Benthic impacts v's water column (for which the guide has yet to be developed). NZKS has only committed to following it at the BOI farms. Ideally all salmon farm resource consents should include a standard condition, incorporating the compliance with the BMP guidelines as amended or added to from time to time.
31. We emphasise that BMP is made up of a number of separate documents covering different aspects of salmon farming. Thus, for example, the BMP Biosecurity Management Plan has been in operation at **all** farms since 30 October 2015. Work has not commenced on a BMP guideline for the water column, nor is there a firm timetable about when that would be started (correspondence with MDC dated 23 March 2017).

Marlborough Salmon Working Group

32. As detailed in the body of this submission, KCSRA had two representatives attend meetings of the MSWG. The stated objective included considering options whereby the existing NZKS salmon farms in the Sounds adopt the best practice management guidelines recently developed for the BOI farms.
33. As noted the actual objective of the MPI turned out to be, **it is submitted**, to obtain buy in from the community representatives to a proposal to locate new salmon farms in the Sounds and in particular the Waitata Reach/Pelorus Sound area.
34. Our representatives are of the view that many questions (including ones related to disease) were never answered, NZKS citing commercial sensitivity in case of the salmon mortality events, or were evaded in case of biosecurity, current disease status or plans for eradication.
35. On request of a community representative, a person from MPI biosecurity attended a meeting and gave a short presentation. Unfortunately he did not belong to the Salmon Mortality Response team and was unable to answer most of the community representatives more detailed and technical questions.

The Updated Disease Risk assessment Report

36. The first version of this report as obtained by KCSRA via the MSWG showed, **it is submitted**, that Dr. Diggles was not well briefed by MPI on the actual situation in the Sounds regarding the mortality outbreaks and the discovery of the NZ-RLO bacteria. He had added it to table 1 and table 3 lists of known diseases of salmon in New Zealand. But he, **it is submitted**, based on his finalised report still seemed to be labouring under the misapprehension that it was confined to the Waihinu farm. We can only conclude, **it is submitted**, that he did not receive the documents issued by the MPI Biosecurity response team which clearly note that the NZ RLO been confirmed at more than one NZKS farm¹¹.

¹¹ MPI Legal Controls to manage the spread of an unwanted organism in Marlborough farmed salmon – April 2016

37. Accordingly, a community representative on the MSWG emailed Dr. Diggles with relevant information and was severely reprimanded by MPI for contacting their disease expert. With the new information, Dr. Diggles updated his report, noting that the bacteria found were present at all NZKS farms and the mortalities happened at NZKS farms, not just at the Waihinau farm.
38. We note with surprise, that it changed nothing about his conclusions regarding the seriousness of NZ-RLO and associated mortalities. Notwithstanding, **it is submitted**, that one of the many causes for environmental concern arising from salmon farming is the introduction of exotic diseases and parasites into the marine environment, as, it is submitted, salmon farms can act as incubators for salmon pathogens if, for example, stressed by high water temperatures, excessive stocking densities and so on.
39. The NZ-RLO has been sequenced and differs only slightly from the TAS-RLO, found in 2005 in farmed Atlantic salmon in Tasmania. However, there is no risk analysis in this Disease report regarding the introduction of exotic diseases, caused by salmon farming. The risk analysis is limited to the “spillback” of diseases of salmon in New Zealand.
40. Wild scallops around New Zealand experience high annual mortality rates (23-39%)(34), and only the branchial RLO infections appear sufficiently severe to be a possible cause of mortality¹². Yet, the consequence of establishment and spread of NZ-RLO is set to LOW in Dr. Diggles report. **We submit**, it is time to introduce the precautionary principle and not allow a further expansion of salmon farming with its associated disease risks for the wild fisheries.
41. We also have some concerns with the approach of Dr Diggles risk assessment around his risk assessment for NZ RLO.
42. Dr Diggles risk analysis process is, **it is submitted**, built around the concept that some aspect of the activity under consideration (coastal salmon aquaculture) can lead to the release of a hazard (disease establishment and spread), that in turn could lead to an undesirable change in the environment.
43. The risk estimate, **it is submitted**, has two steps: First combine ‘likelihood of release’ risk of the disease pathogen (NZ-RLO) with ‘likelihood of exposure’ to a susceptible wild host, causing an infection. This results in the ‘establishment and spread’ risk level, which is deemed **Moderate** for NZ-RLO. Secondly, a Consequence assessment, which is estimated by Dr Diggles as **‘would likely be Low’** for spillback introduction of NZ-RLO, in effect concluding that *‘Establishment of disease would have moderate biological consequences and would normally be amenable to control or eradication. Such diseases may harm economic performance at a local level for some period and/or may cause some environmental effects, which would not be serious or irreversible.’*
44. The risk analysis is a two-step process as well: Firstly, define in a matrix table the ‘acceptable level of protection’ (ALOP) for the “spillback” disease consequences. Secondly, check if the combined risk estimate is lower or higher than the ALOP. The acceptable level of protection in this table is set to Very Low Risk.

12 Results of a survey on shellfish health in New Zealand in 2000

45. The ALOP table is defined in Appendix 1 and is a subjective assessment of the level of risk one is willing to take regarding an environmental change. In this case the chance of introducing a new infectious disease into the marine environment. The current NZ-RLO infection, with its significant mortalities among clinically diseased salmon, exceeds the ALOP as it is deemed a Low Risk. As a way around this undesirable outcome, Dr Diggles, **it is submitted**, assumes that appropriate measures will be undertaken to reduce the disease burden to sub-clinically diseased salmon, i.e. salmon, which do not die or show outward signs of the disease.
46. **It is submitted**, that there is an unfortunate anomaly in the ALOP table (table 7, Appendix 1). The top two rows of the table are **identical**. It does not seem to matter whether the Likelihood of establishment and spread is estimated to be Moderate or High, the severity of the Consequences, and the resulting risk estimation remains the same. In other words using the table 3 times 2 is the same as 3 times 3!
47. Equally, it does not seem to matter whether the consequence of establishment and spread is deemed Negligible or Very Low, when combining it with the Likelihood of establishment and spread levels (Negligible to High), the resulting outcome with respect to the ALOP is the same. **It is submitted**, that this is unlike other ALOP tables and needs review¹³.

Non infectious Agents

48. As part of the Hazard investigation, Dr Diggles has prepared a list of known infectious and non-infectious diseases compiled from wild and cultured salmon in New Zealand (page 18). During the selection of the diseases that require further investigation, the non-infectious agents are immediately eliminated, because there is no spillback risk associated with the likes of jellyfish strike or algal blooms.
49. Algal booms are known to cause significant mortality in wild marine fish as well as in seacaged fish. Dr. Diggles notes that '*Increased risk of algal blooms can sometimes be linked to increased nutrient loads from seacage aquaculture in regions where flushing of nutrients is insufficient*' and then refers to other planning documents, such as the NIWA water column simulations, where this risk is covered.
50. Checking the NIWA report for the Pelorus Sound, simulations of percentage of Chlorophyll were done, **but not** a specific risk assessment for algal blooms. The peer review¹⁴ also sounds a clear note of caution about the validity of the Pelorus simulations, because it is likely that model predictions based on increases of up to 1000% on existing levels of feed input, are inaccurate. The reviewer suggests that the model predictions have to be validated in other ways, before relying on them.
51. According to best management environmental suitability requirements, salmon farms should not be sited in areas frequently subjected to harmful algal blooms¹⁵. This is

13 <http://www.aquaculture.org.nz/wp-content/uploads/2011/06/FAOenvrisk-2008.pdf>

Assessment and communication of environmental risks in coastal aquaculture FAO - 2008

14 Peer review of the Marlborough Sounds Biophysical model predictions, Cawthron Institute report no. 2923, Sept 2016.

15 Comparison of the international regulations and best management practices for marine finfish farming

obviously a known issue for the Queen Charlotte / Tory Channel area, but it is submitted, algal blooms also occur in the Pelorus Sound¹⁶.

Conclusions

52. The Updated Disease Risk Assessment report stresses the importance of managing the biosecurity risks of salmon farming using world best practice and we commend the writer for noting the shortcomings in the current Biosecurity Management Plan. **We submit** that aquaculture regulations are urgently needed - to set uniform environmental standards, as well as the opportunity for better enforcement of these environmental standards.
53. The recurring unusual salmon mortality events are real cause for concern. A lack of openness, still hiding behind commercial sensitivity, has actually hindered getting to the bottom of the problem. We do not agree that the fundamental disease stressors (eg water temperature) are favourably altered by the proposed new sites.
54. It is unfortunate, that MPI Biosecurity did not keep a stricter oversight on salmon mortalities, once they were made aware of the problem in 2012. NZKS in turn it seems, **it is submitted**, has not seen fit to alert MPI Biosecurity as soon as they were aware of increased mortality at their farms in subsequent years.
55. **We submit** that this sort of outcome is why it is unfortunate that the Ministry for Primary Industries is both a promoter as well as the regulator for aquaculture. This creates, **it is submitted**, an inherent conflict of interest. The current Proposal is a prime example of this, where MPI promotes salmon farming expansion, while MPI Biosecurity attempts to monitor the risks around the introduction and an upsurge of previously unknown salmon pathogens.
56. The Diggles Updated Disease Risk Assessment report is, it is submitted, unsatisfactory in a number of areas leading, **it is submitted**, to a more favourable assessment than should be the case. It needs independent revision (by the likes of Dr Krkosek).
57. **We submit** that in the context of a Proposal that is looking to massively increase the concentration of salmon farms in a confined area such as the Waitata Reach that the risk estimations in the Updated Disease Risk Assessment report around the likes of NZ RLO should not be relied upon.

For and on behalf of KCSRA

Andrew Caddie, Chair KCSRA Marine Sub committee.

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16 Pelorus Sound Hydrodynamic Models Report to the Environment Committee 23 July 2015

Appendix 5

Navigational Charts - Recreational Implications

Chart 1 : Recreational Boat Routes commonly used in Outer Pelorus (**blue tracks**) with approx positions of new salmon farms (box icons), PBC/MCC/WBC Club Moorings (red buoy icons), Other Clubs moorings (**yellow buoy** icons).

Chart 2 : Chart showing positions of PBC/MCC/WBC Combined Clubs moorings.

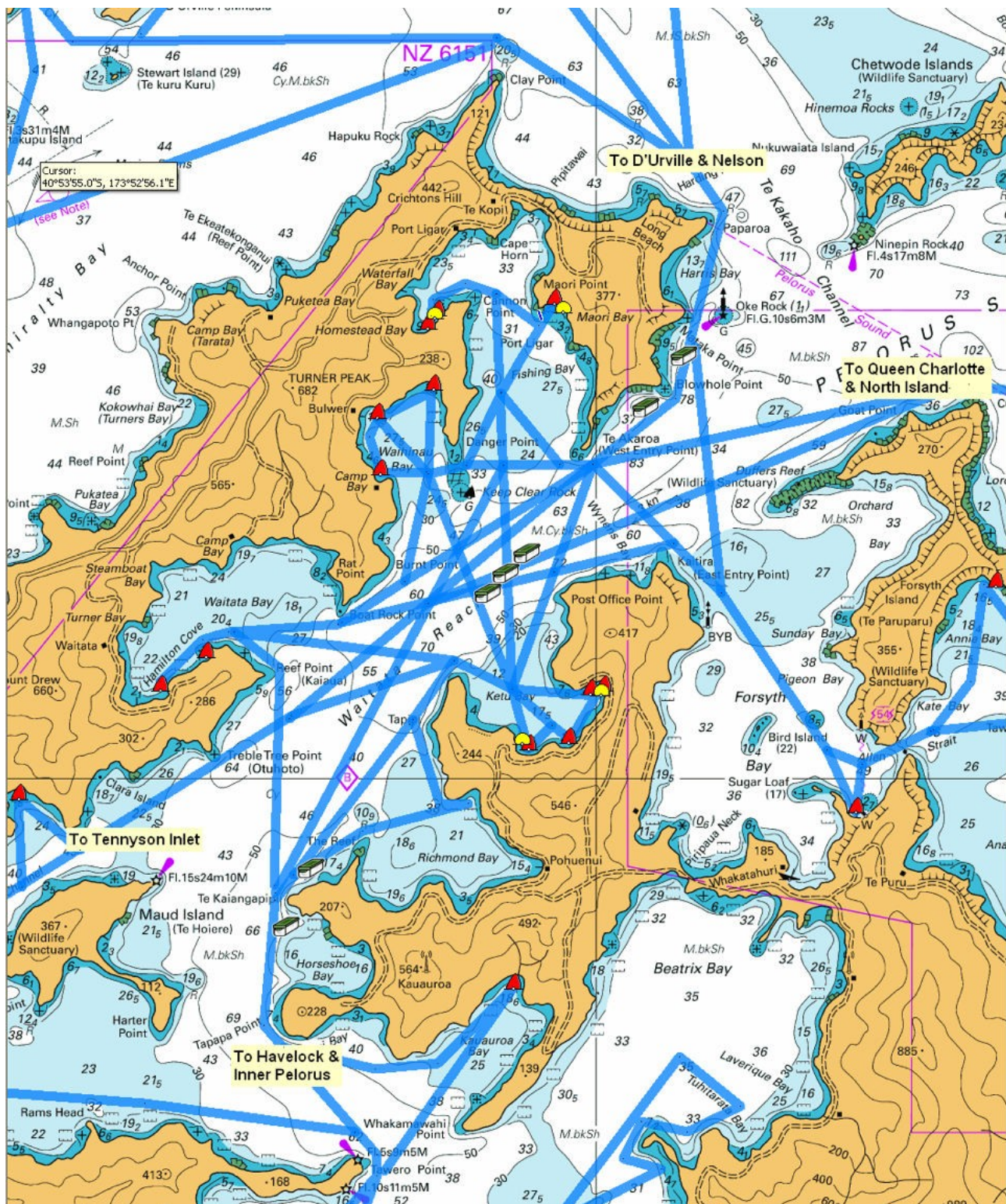


Chart 1 : Recreational Boat Routes commonly used in Outer Pelorus (**blue tracks**) with approx positions of new salmon farms (box icons), PBC/MCC/WBC Club Moorings (red buoy icons), Other Clubs moorings (**yellow buoy icons**).



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