

Kenepuru & Central Sounds



Residents Association Inc.

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Manager, Resource Consents
Marlborough District Council

PO Box 443

Blenheim 7240

Email: mdc@marlborough.govt.nz

Ross Withell

President KCSRA

2725 Kenepuru Road

RD 2

Picton 7282

email: president@kcsra.org.nz

WWW: kcsra.org.nz

15 October 2015

Dear Sir/Madam

Kenepuru and Central Sounds Residents' Association
Submission on Resource Consent Application U150785
KPF Investments Limited
Crail Bay

I write in my capacity as Chair of the Kenepuru and Central Sounds Residents' Association Inc.

1. Introduction

- 1.1 The Association was established in 1991 and currently has approximately 200 household members whose residents live full time or part time in the Kenepuru and Pelorus Sounds. The Association'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. AGMs of the Association are well attended.
- 1.2 The Association has built up a knowledge and understanding of issues concerning the sustainability of marine farming in the Sounds initially through our substantive involvement with the King Salmon Board of Inquiry. In recent times the Association has successfully supplemented member presentations by using professional assistance to submit in opposition to resource consent applications for mussel farms not meeting specified criteria.

Kenepuru & Central Sounds Residents Association Inc.

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

president@kcsra.org.nz
vicepresident@kcsra.org.nz
secretary@kcsra.org.nz
treasurer@kcsra.org.nz
rooding@kcsra.org.nz

As a result of these successful submissions the Association has also participated in subsequent Environment Court hearings following appeals by unsuccessful applicants against the decisions of independent commissioners.

- 1.3 By using expert witnesses and making a detailed analysis of the scientific work surrounding the significant negative impacts of mussel farming, the Association has enhanced its understanding of the significant cumulative ecological issues particularly concerning low flush intensively farmed bays such as Crail Bay. Accordingly, the Association is now not comforted by the so-called assurances from the mussel marine farm industry that this is sustainable and a benign activity with little or no impact on the immediate environment.
- 1.4 The Association is concerned at the seemingly headlong rush from mussel farmers to expand operations through acquiring new public space or increasing the size or density of lines in existing farms. Like Beatrix Bay, Crail Bay is, with some **35**-mussel farms, unfortunately a prime example of what some refer to as the **Tragedy of the Commons**. “If I do not make a grab for extra area then someone else will so I may as well and whilst yields will decline overall I will get a marginal increase”. This outcome cannot be allowed to go on unchallenged.
- 1.5 To emphasis the point we note “every drop of water into a full jug overflows”. This application is such a drop.

2. Decline application

- 2.1 The farm appears to extend more than 200 metres from shore and as such the application would appear to be for a non-complying activity. The Association is of the view that the application cannot meet the statutory threshold for a non-complying activity under Section 104D of the Resource Management Act 1991 (RMA) and that the application should be declined.

3. Request to Appear

- 3.1 The Association confirms that it would like to present/talk to this submission at the public hearing and will be represented.

4. The Association’s Concerns

- 4.1 The Association is concerned at the continuing flow of applications for additional marine farming space within the Marlborough Sounds without any assessment of cumulative environmental impact. This is most concerning in low flush intensively farmed areas such as Crail Bay. The Association is primarily concerned with the material adverse cumulative effects of the existing level of mussel farm development in Crail Bay. We refer to the Ministry for the Environment commissioned paper on cumulative effects (**See Reference point A**) in the context of the RMA and make the following observations by way of summary:
 - Cumulative effects include the known and potential effects of the activity in question added to the known and potential effects of other consented activity (page 6).
 - Cumulative effects can and must be considered when determining a resource consent application (page 6).

- There are cumulative effect limits on all natural character and landscape values whether or not they are considered outstanding or features (page 11).
 - “One only need visit the Marlborough Sounds...to wonder whether we have....exceeded the sustainable limit of some landscape resources...” (Page 14).
- 4.2 The Association submits that, unfortunately, this application highlights these and related issues. The application is for an extension of approximately one hectare which represents a 28% percent increase in the size of the existing farm. Through a process of “creep” this farm has increased in area (if this application is successful) by nearly 68% from the original grant.
- 4.3 Looking up from this application and considering the cumulative area of mussel farms in Crail Bay we see that there are 35 farms with a total area of approximately 163 hectares. (For data source see **Reference point B**). Accepting the applicant’s figure of 1570 hectares as making up the entire Crail Bay area, that represents over 10% of the water space in mussel farms. It is also noteworthy that mussel farm area in the Crail Bay area has steadily crept up - by nearly 50% since 1999 (**See Schedule A to this submission**).
- 4.4 The Association is concerned at the seemingly limitless sprawl of mussel farms that this application and others like it are now representing. **This can only be answered by reference to the cumulative environmental impact of all existing mussel farm activity - aesthetically, recreationally, navigationally, and ecologically.** If the cumulative impact of existing activity is already at or above acceptable thresholds then all of the impact of an addition to the area of an existing farm will be of an unacceptable level, irrespective of how it stands relative to the level of existing activity.
- 4.5 The Association is of the view that the cumulative impact of marine farming in the Crail Bay, Beatrix Bay and Clova Bay embayment is clearly already at or above acceptable levels from an aesthetic, recreational, navigational and ecological perspective. As such any further mussel farm applications for the embayment, including this application, should be declined.

5. Ecological Cumulative Impact – Analysis

- 5.1 The Marlborough Regional Policy Statement (‘MRPS’) acknowledges the potential for cumulative ecological impact at Section 3:

“Marine farming competes with indigenous stock for nutrients and could therefore disrupt the marine ecosystem....The community relies on the quality of the marine ecosystem for cultural, social, and economic wellbeing. Many activities take place in the coastal marine area. ... As pressures for community use and development increase these known areas must be restored and further degradation prevented...”

“Little is known about the cumulative or long term effects of some activities. For example, there is little known about the long term effects of farming filter feeding shellfish on the habitat of indigenous species.”

- 5.2 Whilst there is still much to learn about the complex and intertwined marine ecosystem, particularly water column effects, our understanding has advanced significantly since that plan statement.

- 5.3 Mussels are filter feeders. It has been established that the average sized green-lipped mussel will filter around 19 litres of seawater per 24 hours. When this pumping rate is multiplied by the number of mussels present in intensively farmed areas such as Crail Bay (100's of millions) their "scrubbing capacity" and thus cumulative and disruptive impact on the water column should be quickly grasped.
- 5.4 Dr Brian Stewart, a marine ecologist and expert witness for the Marlborough District Council (MDC) in a recent Environment Court hearing, under oath, noted that mussels non-selectively filter out particles from the water column in the five to 500 micrometer range and that includes plankton, phytoplankton, zooplankton, seston (palatable particles) and general silt and detritus in the water column (See Reference point C).
- 5.5 That which is palatable is food ingested into the mussels gut and consumed and that which is not is wrapped in mucus and ejected (pseudofaeces). Even a layperson can line up the dots as to the likely cumulative impacts on the ecosystem as hundreds of millions of mussels hungrily strip phytoplankton, zooplankton and fish eggs from the water column.
- 5.6 Further, the Association's research reveals that the cumulative ecological impact of mussel farms within the Marlborough Sounds was considered in a 2009 report by the Cawthron Institute consolidating research and information on sustainable aquaculture in New Zealand (See Reference point D). This report acknowledges that even small scale developments will have an effect on ecological processes, species, population or communities in the growing environment¹. It concludes²:

- *"that growth in the aquaculture industry as anticipated over the next 15 years (NZAS 2006) will in turn require a better understanding of the wider ecosystem effects of shellfish aquaculture, particularly with regard to the cumulative effects of additional and aquaculture development (along side other anthropogenic stressors) within the context of ecological carrying capacity. Research to address wider ecological issues where information is relatively sparse will require understanding of complex ecosystem processes, many of which occur beyond the immediate environment of the cultivation area (e.g. changes to food web pathways)."*

- *"that there is little known about the effects of aquaculture and associated biodeposits on high value reef communities that can be found in close proximity to some farm areas. This study also identified a notable dearth of information surrounding the effects of marine farms on the wider food web and in particular, wild fish assemblages. However, we know little regarding the effects of bivalve aquaculture on the composition of plankton communities, which in turn may have wider ecological effects on the food web."*

- *"Included in this information gap is the general lack of research surrounding the potential consumption of larval zooplankton species (e.g. fish, crustaceans) and the subsequent ramifications for their recruitment success".*

1 At subsection 2.4.4

2 At section 8

- 5.7 Of course the ecological impact from mussel farming is not uniform across a bay. The Association submits that areas close to mussel farms will be ecologically impacted far more and much earlier than the wider bay area in its entirety. More particularly, areas under and immediately adjacent to mussel farms are likely to be ecologically impacted through biodiversity changes and particulate feed and energy depletion far worse and far more quickly than the wider bay area in general.
- 5.8 Conceptually it is clear that where food depletion occurs, cultured mussels could theoretically out-compete other suspension-feeders (e.g. zooplankton and benthic shellfish) for particulate food, or exceed what is termed the ecological carrying capacity of a marine farmed area (see Cawthron Section 2.4.4).
- 5.9 A more recent (2015) MDC commissioned study from NIWA (**See Reference point E**) strongly supports the Association's concerns as to the likely disruptive biological effects of intensive mussel farming in low flush bays such as Crail Bay. In another appeal to the Environment Court by an unsuccessful applicant for a mussel farm in Beatrix Bay the appellant saw fit to subpoena one of the lead NIWA authors of this study in order to table the model before the Court and have the author answer questions. Naturally the Association took the opportunity to burrow into and analyse the model's outcomes, notably the cumulative impact of existing mussel farms on key biological indicators in Beatrix Bay.
- 5.10 In the course of cross-examination the NIWA witness (Dr Niall Broekhuizen – one of the prime authors of the report) confirmed that our reading of the models outcomes **was correct**. Namely, that without the existing mussel farms there would be a six /seven fold increase in zooplankton over summer. (**See reference point F**). That is, the existing mussel farms are consuming or displacing 85% of zooplankton in the water column within Beatrix Bay. Dr Broekhuizen confirmed that the model showed that the existing mussel farms are also causing a doubling of ammonium levels in the water column on a year round basis (Reference Point F). Further, Dr Broekhuizen also confirmed that the model showed that without the existing mussel farms, phytoplankton levels would increase by 125%, which means that mussel farms are causing a reduction of around 60% of phytoplankton in Beatrix Bay over the winter months (Reference Point F).
- 5.11 Having had Dr Broekhuizen confirm, under oath, that the Association had calibrated the model's outcomes correctly naturally we have carried out the same exercise for Crail Bay. This too reveals similar disturbing results. For Crail Bay the NIWA model shows that 70 to 80 percent of zooplankton are consumed by mussels over summer, as well as between 50 and 70 percent of small and large other palatable water column detritus. The existing farms are also (approximately) doubling both the ammonium and nitrate levels of the water column. **These are clearly not minor impacts**. Indeed, Dr Broekhuizen has since stated *“I agree that (relative to no mussel and no fish farms), some of the changes predicted by the model are large enough to leave me feeling that other aspects of the foodweb may change materially”* (**See Reference point G**).
- 5.12 Anecdotally long term residents under oath also confirmed to the Court in the Beatrix Bay hearing that following the spread of intensive mussel farming in the Bay there have been noticeable declines in natural organic activity and dramatic changes in the clarity of the water column as the mussels vacuum up the phytoplankton etc in the water column. (**See Reference point H**).
- 5.13 Mussel farming also has material benthic impacts. Mussel farms can deposit between 250 and 400 tonnes of material onto the seafloor per hectare per annum (**See Reference point I**) and much of the Bay's more productive photic zone is now impacted in this way. Bearing in mind that it has been established that the

depositions from mussel farms can be found up to 50m from the edge of a farm (dependent on flow rates) then we calculate that 15%- 20% of Crail Bay's benthos is now impacted by mussel farm fouling and biodiversity changes. Any development imposing yet further effects on the Bay in this manner is not appropriate development.

5.14 There is thus both recent scientific and anecdotal evidence of a more than minor cumulative and negative material impact on these highly valued inshore areas from existing levels of mussel farming activity.

5.15 It is telling that both the application and the ecological report are simply silent on these matters. **A precautionary approach must be adopted. The appropriate response is to decline the application entirely.**

6. Legal Relevance of Cumulative Impacts

6.1 The Association submits that the Resource Management Act 1991 ('RMA') requires regard to be had to cumulative impacts when assessing marine farm applications (refer Reference Point A). This includes Part II of the RMA, and also section 104 which requires a consent authority to have regard to environmental standards, regulations, national policy statements, the New Zealand Coastal Policy Statement, the Marlborough Policy Statement, as well as the MSRMP.

6.2 The No 1 policy of the New Zealand Coastal Policy Statement ('NZCPS') reads as:

"To safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land, by:

- *maintaining or enhancing natural biological and physical processes in the coastal environment and recognising their dynamic, complex and interdependent nature.."*

6.3 Policy 3 requires the adoption of a ***precautionary approach*** towards proposed activities whose effects on the coastal environment are uncertain, unknown, or little understood, but potentially significantly adverse.

6.4 The No 1 coastal policy objective in the Marlborough Regional Policy Statement ('MRPS') reads:

"water quality in the coastal marine area be maintained at a level which provides for the sustainable management of the marine ecosystem."

6.5 Paragraph 5.3.6(c) of the MRPS goes on to provide as follows:

(c) Support research into the cumulative effects of water based activities on water quality.

Particular reference needs to be made to the cumulative or long term effects of water based activities on water quality, especially marine farming. Little is known about the cumulative or long term effects of marine farming on existing natural stocks and ecosystems."

- 6.6 The current level of mussel farming in Crail, Beatrix and Clova Bays is, in our view, **very clearly** beyond sustainable levels. The wholesale changes the existing level of mussel farming is causing to the food web, water column and benthos are a serious risk to indigenous ecosystems, right up and through to indigenous recreational fish and shell fish. There is now a **growing urgency** in the need for the Marlborough District Council to accept that a problem exists with the existing level of farms in these areas and that it needs to face up to its responsibilities in this regard.
- 6.7 The Association submits that the application fails the legal threshold prescribed by section 104D of the RMA on the basis of existing cumulative ecological impacts alone. 104D imposes a special threshold to cross – a notably more difficult policy assessment threshold to cross than that of a discretionary activity assessment under section 104 of the RMA. (Refer Paragraph 37 Queenstown Central Limited v Queenstown Lakes DC [2013] NZHC 817 “*It is not an overall judgment of some degree of the adverse effects of the proposal. The test is tougher. The activity must not be contrary to any of the objectives or policies.*”)

7. Cumulative Landscape and Natural Character Effects

- 7.1 This farm is in the proximity of an area of outstanding natural landscape value as identified in the MSRMP and therefore poses a further material obstacle for the applicant to satisfy as a non-complying activity under Section 104D of the RMA.
- 7.2 The existing level of mussel farming in Crail Bay is generally regarded by the community and visitors to the area to dominate the landscape/seascape interface of the bay. The Association’s position is that this is beyond an appropriate level of development from a visual amenity perspective. Further, most landscape and natural character experts agree that their professional assessment of the landscape values of Crail Bay is materially reduced by the extensive level of mussel farm development around its coastline.
- 7.3 In accordance with cumulative impact principles, no further development is appropriate where the threshold for acceptable landscape or natural character impact is already exceeded.

8. The Association’s Position

- 8.1 As noted, the Association believes and submits that where the cumulative impact on indigenous ecological systems of existing marine farms in an area is already at unacceptable levels then cumulative impact principles dictate that any further activity cannot be permitted. This is clear from the policies of the MSRMP, the MRPS and the NZCPS.
- 8.2 The Association also believes that the same applies for aesthetic, recreational, navigational and other negative amenity impacts from further marine farm activity in already heavily farmed areas. That is, if an area is already heavily stocked with marine farms then an unacceptable level of negative amenity impact is likely to have been reached. As such, *any* level of further impact cannot be permitted. This approach is necessary to prevent limitless sprawl. As we hope to be making clear, the Association believes that Crail Bay has passed this point.

- 8.3 The Association is of the view that this is the position for the wider Clova Bay, Crail Bay and Beatrix Bay area.
- 8.4 There is growing and compelling evidence that our concerns are warranted. The onus must be on the Applicant to prove otherwise.
- 8.5 The Association believes it unfortunate that the mussel farming industry has been enabled to evolve in these low flush areas absent consideration of cumulative impact. The Association submits that this is not a basis on which the mussel farming industry within the Marlborough Sounds should continue to evolve. Nor is it a basis upon which this application can be properly considered. In other words, the Association submits that the Applicant has to demonstrate that the existing cumulative effects are minimal. The Applicant has not done so. Indeed the scientific evidence is to the contrary.

9. Other Specifics of the Subject Application

9.1 With regard to other specifics of the subject application the Association also makes the following submissions:

- The Association is of the view that the public aesthetic and recreational values of the area have, if anything, increased over time as public recreational and other patronage of the Beatrix Bay, Clova Bay and Crail Bay areas has increased.
- The Association does not accept the Applicant's propositions that existing marine farms mean that further marine farms or extensions to existing ones will have only a minor marginal impact. The logical extension of such propositions is limitless sprawl. As noted, the Association's position is that a proper assessment of environmental impacts is a cumulative one. If already at or above acceptable levels then no further activity can be permitted. In other words, each extra drop of water into a full jug overflows.
- Our research shows that a little to the south of this application in the same bay area an **ecologically significant marine area has been identified. (See Reference Point J)**. The Applicant's marine ecologist (Mr Davidson) is one of the authors of the publication identifying this and other significant marine sites in the Sounds. Accordingly we are surprised that he has not corrected the assertion at paragraph 15 of the application that there are **no** specific sites of marine ecological significance in Crail Bay, and then cites the Davidson 2011 study as proof! At best this is a glaring omission; at worst misleading.
- We **strongly submit** the hearing authority drill into this matter. The Hearing panel should ascertain the health or otherwise of this ecologically significant marine site given its close proximity to the application area. This is particularly necessary given the recent media publicity from a Davidson report sounding the alarm on the poor state of significant marine sites in the Queen Charlotte. In passing, we note that report's high level of concern at the loss of soft bottomed substrate – such as that in this application. This concern contrasts quite sharply with the more casual approach to the importance of such habitat in the context of this application (see paragraph 5.1 of the Davidson report for this application).
- The MDC expert ecologist witness in the Clearwater hearing (Dr Stewart) also made some pertinent comments as to the limited usefulness of drop camera images in mussel farm applications (**See Reference point C**). In any event we are surprised that Mr Davidson saw fit in his report for the application to make no

comment as to the obvious infaunal activity evident in the benthos from his drop camera images that will be covered by depositions in due course should the application be granted. Again Mr Davidson notes a nearby reef and apart from asserting that there should be no impacts from the mussel farm, saw fit not to confirm that assertion by any video or other images notwithstanding that reef formations are extremely important areas.

- The Applicant also cites Section 104 (2A) of the RMA. We note that the applicant has grossly mis-applied this provision. This is limited to mussel crop on the lines – which can of course be dealt with by a progressive phase out of the consent. Refer paragraph 211 Port Gore Marine Farms Ltd Decision No. [2012] NZEnvC 72.
- We note, as an aside, that the industry is very secretive as to mussel yields from mussel farms in general, particularly where it might disclose what we understand has been a steady decline in yields, as farm area in the Beatrix, Crail and Clova bay area has increased. Reports are beginning to emerge of some lines on farms in this area now taking up to 6 years to fatten mussels with other lines not able to fatten mussels at all. Accordingly, we were very interested to see the Applicant state he expects a yield of some 60 tonnes of mussels (GWT) per annum from the proposed extension (approx 1 hectare). This seems a **gross overstatement** and we submit that the applicant be required to provide verifiable records of farm yield both present and historical.

10. Conclusion

The Association is of the view that the application fails the discretionary activity criteria of the Marlborough Sounds Resource Management Plan. It also offends against the objectives and policies of the New Zealand Coastal Policy Statement and the Marlborough Regional Policy Statement. It stands to have a more than minor environmental impact and fails the tough legislative policy threshold as prescribed by sections 104D of the RMA.

As such the Association submits the application **should be declined**.

We understand that MDC should have ready access to all the references cited but if that is not the case please let us know and we can provide the same.

Yours faithfully


Ross Withell

President
Kenepuru and Central Sounds Residents' Association
c/- 2725 Kenepuru Road
RD 2, Picton 7282

Email president@kcsra.org.nz

cc Aquaculture Direct Limited

Attn. Mr. B Caldwell

PO Box 213

Blenheim 7240

Email bruce@aquaculturedirect.co.nz

References

- “When is Enough, Enough- Dealing with Cumulative Effects under the RMA” By Phillip Milne, Partner, Simpson Grierson (2008). A paper commissioned by the Ministry for the Environment.
- Data obtained from Marlborough District Council sources at <http://maps.marlborough.govt.nz/> .
- Evidence of Dr B. Stewart in *Clearwater Mussels Limited & KJB Marine Farms Limited v Marlborough District Council* (ENV-2014-CHC-36). See Court Transcript at pages 439 to 484 – particularly pages 447-448 and 441.
- “Sustainable Aquaculture in New Zealand: Review of the Ecological Effects of Farming Shellfish and Other Non-fish Species” April 2009 Cawthron Institute.
- “A Biophysical Model for the Marlborough Sounds – Part 2 Pelorus Sound” Prepared for the Marlborough District Council, March 2015 by NIWA scientists Dr N Broekhuizen, Mark Hadfield and David Plew.
- Evidence of Dr N Broekhuizen in *RJ Davidson Family Trust v Marlborough District Council* (ENV-2014-CHC-34). See Court transcript at pages 253 to 276, particularly pages 254 to 266.
- “Water quality models for the Marlborough Sounds” – a report prepared by NIWA for MDC May 2015 to answer questions on the model raised by Mr R. Schuckard. See page 16.

- Evidence of Mr W. Scholefield in *RJ Davidson Family Trust v Marlborough District Council* (ENV-2014 –CHC-36). See Court transcript at pages 347 to 352- particularly page 349.
- “Acoustical and Sedimentological Characterization of Substrates in and around Sheltered and Open-Ocean Mussel Aquaculture Sites and its bearing on the dispersal of Mussel Debris.” Neil D. Hartstein. *Journal Of Oceanic Engineering* January 2005.
- “Ecologically Significant Marine Sites in Marlborough, New Zealand.” Written by: Rob Davidson, et al, September 2011. For the Marlborough District Council and the Department of Conservation

Schedule A

