

**Submission to the Legislative Council
Inquiry into Fin Fish Farming in Tasmania
29th. November 2019**

Attention: Mr. Stuart Wright,
Inquiry Secretary, Parliament House, HOBART 7000
finfish@parliament.tas.gov.au
Phone: (03) 6212 2250.

Dear Mr. Wright,

Please find below my personal submission to the Legislative Council Inquiry into Regulation of Finfish farming.

I can be contacted on [REDACTED] if you need any clarification or further information in regard to my submission.

Thank you for the opportunity to provide community input on this very important issue.

(Ms.) Austra Maddox
[REDACTED]

A. Overview of the Nature and Scope of this Submission :

I have taken a close interest in aquaculture industry issues both as an individual citizen and as a member or associate of various groups which also have an interest in these issues. As a result I have followed media coverage on these matters, attended numerous meetings at different levels, and done some background reading of my own, although I am not a scientist. As a result of these activities I feel that I have a reasonably well grounded understanding of some of the operational and political aspects of the industry.

In this submission I have only focused on some key issues of particular concern to me.

I am highlighting :

- The Role of the Environment Protection Authority and related fragmented management structures;
- Public Health aspects;
- Heavy metals re-suspension;
- Lack of transparency by industry; and
- the need to apply the precautionary principle at every stage of this industry.

I have not attempted to reproduce other information which is available elsewhere which covers more technical matters. I am sure that the Inquiry will receive other submissions from persons with relevant technical and scientific backgrounds which will cover those technical matters and provide the currently available data of relevance for the committee's information.

I mention this specifically because as a private citizen I have attended briefings, etc., which explained much of that material which is, of course, already largely in the public domain. Despite this, however, it appears not to have been taken notice of by either the industry, the

government or the authorities, including the Environment Protection Authority. My hope is that this Inquiry will force them to take this considerable mass of knowledge, including from overseas experience, into consideration in future planning and decision-making in regard to the industry. (ToR 1a)

B. Site selection and approval (Terms of Reference 2a & 2b)

It is difficult to even comment sensibly on Tasmania's selection and approval processes as there is such a lack of transparency.

Fundamental criteria in relation to ecological sustainability appear to be lacking, starting with a dearth of base-line data.

The whole process needs to be over-hauled and reformed to ensure that

- ✓ there are clear criteria,
- ✓ there are independent scientific assessments of sites;
- ✓ that ad hoc development is not allowed;
- ✓ that data and monitoring requirements are documented,
- ✓ that there is genuine community consultation, and
- ✓ that the precautionary principle applies.

Without such a more rigorous approach the industry lacks credibility and has no social licence.

In regard to ongoing operational issues clear and timely processes need to be put in place so that **issues can be dealt with as they arise**. Currently there is only capacity to look at damage in hindsight (Macquarie Harbour !!!)

Current processes are clearly inadequate, both in regard to initial lease applications and other ongoing operational issues. One only has to read the resignation letters of member of the Marine Farm Review Panel over the Storm Bay debacle to understand that appropriate scientific criteria are not implemented. This also highlights the fragmentation of decision-making and management of the industry. Combined with the general lack of transparency and the lack of genuine public consultation and public information this creates a situation where community members with concerns feel that there is no effective pathway for dealing with issues. A published monitoring programme and real-time public disclosure would help to overcome some concerns.

C. Re-Suspension of Heavy Metals : Public Health Implications :

In healthy waters, heavy metal molecules from industrial contamination bind to sediments, making them largely inert - i.e. they don't get into the food chain. But in low oxygen conditions, such as those resulting from excess nutrients generated by salmon farming, the bonds between the heavy metal molecules and the sediments are broken, resulting in re-suspension of the heavy metals into the water column. Suspended molecules are taken up into the food chain, and concentrated in animals and plants.

This is a concern looking backward at Macquarie Harbour, which has a strong heavy metal legacy from upstream mining operations, and looking forward for Storm Bay, which has a strong heavy metal legacy from the Zinc Works and other industrial effluents. In both cases, one could ask — and should ask — **what is the evidence that food being raised in waters enriched with heavy metals is safe for human consumption?** Because certainly the working understanding is that it is absolutely not.

In Macquarie Harbour, it seems highly likely that salmon raised there had a detectable toxic load of

heavy metals, but as far as I am aware, this was never tested. To my knowledge, the expansion approvals there were given without regard to toxic load, or to the nutrient effects on toxic load. This clearly should have been researched prior to expansion. And where's the evidence to demonstrate that people eating fish from Macquarie Harbour were not exposed to high levels of heavy metals?

My understanding is that the expansion approvals in Storm Bay, have not considered heavy metal impacts on human health. However, the dynamics of water flow in the bay will flush the lower-oxygen water over the areas of worst heavy metal contamination, then continue flushing that water around the bay. The bond-breaking occurs rapidly - within hours of exposure - so the continuous flow of low oxygen water may be highly dangerous. Because of the recirculating nature of bay water, re-suspended metals will likely affect animals and plants in parts of the bay not currently affected. If the salmon are also affected, as one would expect they would be in that environment, then that would hurt people who eat them. A phenomenon called **bio-accumulation** means that long-lived organisms (such as humans) that eat other organisms (e.g. contaminated fish), will concentrate the toxins in their own tissues.

The reason this is important is that when we look at places like Minamata, Japan, the horrific impacts of heavy metal toxicity on humans through the food chain are frighteningly obvious : horrific birth defects, neurological impairments, unusual cancers. This is clear evidence that food for human consumption must not be grown in conditions enriched with heavy metals.

There are really important questions that need to be asked :

- ◆ What evidence do we have that the salmon are safe to eat and will remain safe to eat?
- ◆ Is there baseline data on metal levels in these waters ?
- ◆ What evidence do we have that salmon farming is not and will not exacerbate the heavy metal problem for other fish (recreational and commercial), as well as for other native species like protected marine mammals and seabirds?
- ◆ What monitoring is in place to study this, and how can the public access these data?
- ◆ What information or research has the Environment Protection Authority sought to include in its approval process ?

I have attached some relevant references at Appendix A if Inquiry members wish to inform themselves in more detail on some aspects of these issues.

D. Environmental Impacts (Term of Reference 2c) :

At present the Environment Impact Statements which are required from industry are lacking in genuine content, without comprehensive data and not including a whole range of criteria which should be addressed.

This is clearly a real concern in the case of Storm Bay. It has been publicly stated that the science has NOT been done to identify all the natural systems of this area. Despite this the industry wishes to proceed and the E.P.A. has mildly responded that perhaps a lower biomass would be better in the absence of a proper assessment ! This cavalier approach to mere adaptive management demonstrates just how ineffectual current management processes are. Surely even the E.P.A. has learnt from the mistakes of Macquarie Harbour ! Or have they ?

Such a lack of concern for potential environmental impacts reinforces the perception that the E.P.A. is merely following a government directive of "develop develop develop", regardless of any other considerations. As cited in regard to heavy metals above, this raises a number of serious questions and points to the need for a strengthening of the role of the E.P.A. in this area.

Adaptive management is not a substitute for proper planning and the application of the precautionary principle !! That planning must include base-line surveys and data, full mapping of the subject area, including identification of sea grasses and other marine life which would be impacted, community uses potential effluent issues etc..

Our waterways need to be protected from ad hoc development and short-term thinking.

They also need to be protected from industry debris. There has been public concern expressed about the amount of industry debris and the hazard that this is to other users of our waterways. The very few fines which have been levied on the industry are so totally inadequate that they are not even the equivalent of "a slap on the wrist" ! The industry must be made accountable for this and other damage it causes, and penalties should be a real and significant deterrent to slack practices.

E. *Lack of Transparency* : (ToR 2c) :

There is a lack of transparency and accountability at every level of this industry. I have attempted, as have others, to get industry responses on very specific issues at times, only to be met with excuses about lack of availability or commercial-in-confidence considerations. This is simply not good enough for an industry which uses public waterways and whose operations impact on the community in a range of ways.

Many of us perceive the State Government as being so focused on industry expansion that it fails to ensure that adequate safeguards are put in place. Even worse is that it allows the very body which we should be able to rely on for genuine evidence-based planning - the Environment Protection Authority - to simply approve virtually any expansion proposal without adopting the precautionary principle approach. We have seen the disastrous results of this irresponsible approach in Macquarie Harbour. Action needs to be taken to ensure that the E.P.A. actually does its job properly in order to protect our marine environment and the health of Tasmanians.

There is a dearth of information on critical operational aspects of the industry : e.g.

- fish kills;
- jelly fish bloom impacts;
- fish escapes;
- bio-security information e.g. use of antibiotics.

Where is the independent science-based planning material e.g. long-term marine ecology assessments ?

Where is the base-line data on issues such as water quality, metal loads, oxygen levels, presence of other marine species, included endangered species ?

If the industry and the E.P.A. have in fact shown due diligence and this information is available to them, then why it is it not publicly accessible ?

F. *Water Quality and Public Health* :

One issue of concern is the severely compromised quality of the water in the rivers supplying Hobart's water supply. This has the potential to have major public health ramifications. We must not allow a complacent E.P.A., an irresponsible industry, and a do-nothing government to continue to run the risk of serious disease, etc., from continuing this pollution.

Independent testing in the vicinity of salmon hatcheries has revealed high levels of pollutants in the Derwent and Florentine rivers that supply Hobart's drinking water. See references at Appendix A.

Data from the Derwent Estuary Program, which has been monitoring water quality for 2 years, has been presented publicly. I was shocked at their findings, but even more shocked to find that these have apparently been ignored by the E.P.A..

The industry is now talking about land-based hatcheries, but the damage is being done NOW, and immediate action is required.

Other effluent, issues with nutrient load etc., from salmon pens has been widely reported, but again it appears that no remedial action has been mandated and over-stocking of pens apparently continues at the industry's discretion.

G *What Next ??*

On the basis of the concerns raised in this submission I think it is reasonable to propose a moratorium on any industry expansion until fundamental issues have been addressed and the protection of our marine environment and waterways can be assured through good management processes and proper oversight by a competent environmental authority.

I really hope that the committee will formulate strong recommendations which the government can not just ignore. Individuals and community groups have been raising these issues for some time now. Due to past inaction we have seen significant environmental damage already. We must act to prevent it in the future.

Austra Maddox.

APPENDIX A - Some relevant references :

Minamata disease — mercury poisoning:

https://en.m.wikipedia.org/wiki/Minamata_disease

How excess nutrients result in low oxygen:

<https://en.m.wikipedia.org/wiki/Eutrophication>

How low oxygen resuspends heavy metals

<https://onlinelibrary.wiley.com/doi/abs/10.1002/clen.201000417>

A good report on fishing and food safety in the Derwent and Storm Bay:

<https://www.derwentestuary.org.au/fishing-and-seafood-safety/>

Heavy metal contamination in four recreationally fished species in and around Hobart:

<https://dpiwwe.tas.gov.au/Documents/HonsThesis-JVerdouw-2008.pdf>

Macquarie Harbour: Low oxygen:

<https://epa.tas.gov.au/Documents/IMAS%20Technical%20Report%20on%20Macquarie%20Harbour%20Condition.pdf>

With great irony, concerns raised about heavy metal re-suspension from dredging, but apparently oblivious to the link to nutrients and low oxygen:

<https://mobile.abc.net.au/news/2017-05-03/huon-aquaculture-seeks-legal-halt-to-macquarie-harbour-dredge/8493708>

Scientific testing in the vicinity of salmon hatcheries revealed high levels of pollutants in the Derwent and Florentine rivers that supply Hobart's drinking water. There is video that illustrates the contrast between the waters above the hatcheries that is pristine and the polluted waters below

(<https://www.youtube.com/watch?v=L0bhcp5VcnA>).

High nutrient levels downstream of hatcheries have also been documented by the Derwent Estuary Program, as part of a two year monitoring program (<https://www.derwentestuary.org.au/assets/>

