From:	Clare Smith
To:	Tasmanian Salmon Study Secretariat
Subject:	Personal submission to the Salmon Inquiry - Clare Smith
Date:	Sunday, 5 July 2026 10:31:39 PM
Attachments:	Submission to the Salmon Inquiry Dr Clare Smith personal.pdf

Inquiry Study Leads,

Thank you for the opportunity to make a personal submission, and to meet you (Wendy) with the AMA last week. As we discussed, the AMA will be making a more detailed evidence based submission in future topics. This is a personal submission.
It has not been clear whether this deadline has been just for topics 1 and 2, or as I and most others have assumed, for our submissions on the industry as a whole. I have addressed a range of issues.

One matter raised at the meeting was on the engagement of young people. I have been in touch with some, and it turns out this two weeks were mid-year exams. Many are keen to contribute but daunted by the process. I have heard that teachers from several schools are aware of their students wanting to have a voice. I spoke today to a high school student who had a good suggestion. He said could there be a QR code that could go on posters that could be distributed to schools that directed young people to a web page with some simple open ended questions they could fill in, with the option of adding a file if any wanted to go into more depth. This survey method was one option for the Climate Change Act review though there was a silly small character limit. Just in case your office does not know how to make a QR code, I am conveying, as asked, the offer of making one for the project. There was considerable sensitivity to the fact that some of the cohort hoped to work in the industry, as well as those who thought it should clean up its act. I also have another contact at Sustainable Living Tasmania who has lots of engagement with young people and is a very positive voice. I will track down his name and contact details and if he is willing, I will ask him to contact you at this email address. I think this is an important gap to fill, and I am very aware of the protective mental health benefits of having avenues of turning anxiety (highly prevalent) into action. I am happy to work on the questions if helpful.

Thanks again for your work,

Clare

Dr Clare Smith
[redacted]

Submission to the Salmon Inquiry
5/07/2026
Dr Clare Smith

Thank you for the opportunity to contribute to this Inquiry.

I am a retired GP, a member of the Australian Medical Society, Doctors for the Environment and a co-convenor of the Tasmanian Climate Collective. I have a special interest in mental health, particularly in children and young people. This is a personal submission.

In preparation, I have spoken to many and read a great deal. I could provide quantities of peer-reviewed good quality papers but have chosen, recognising the cumulative submission load, to present the conclusions I have reached on this basis with a few key resources, though I can supply much more on request. The AMA submission will present the key resources on multi-drug antimicrobial resistance at the next stage.

"The objectives of Phase 1 will be to provide a trusted evidence base for considering future regulatory and policy settings, and to minimise the degree of contested views on the industry, its impacts and its regulation."

This is a key objective, as I am most concerned with the management of the missing or contested views.

I would like to comment on a range of matters.

Study Plan concerns:
The study plan recognises 'the need to strengthen the public understanding and by acknowledging missing evidence, build a consensus of what we know about how commercial salmon farming is affecting the Tasmanian social, economic, and physical environment and what options do we recommend for the future.'

1) To me, this is an industry-leaning plan. Missing knowledge needs revelation of past failures **and** future contemporaneous, comprehensive and transparent reporting, not merely acknowledgment of poor past behaviour as a basis for public understanding. Anything less is only going to fuel public mistrust and continuing loss of social licence. Unless there are significant reform recommendations followed by government commitment to full implementation, the potential of this Inquiry will be lost.
2) There is a gap in the consideration of multidrug antimicrobial resistance (AMR) and the severe potential consequences to human health – see the AMA submission.
3) There is no clear place in this study plan to hear the voice of our youth who will grow up to inherit what we leave them. See separate email for suggestions on options for engagement.
4) Social licence is reflected in the Preface statement: '... also recognise the views of those who see the environmental costs being outweighed by the benefits to local communities.' And of course the opposite. The concerns are broader and growing, and there are a variety of voices that need a sensitive hearing and a pathway to a shared safer future. Social licence has fallen significantly and this matters.
5) Food security must be accompanied by food safety. This link is not clear. For example, reports of the harvesting for consumption of moribund fish have spread widely and research from Monash University has identified AMR genes in salmon from supermarkets. Personally, I no longer eat it, though I have enjoyed it in the past.
6) Recreational fishing is specifically recognised as an area where amenity has been lost, but there are also many other potentially risky water contact activities like swimming,

sailing, surfing, snorkelling, diving, sail-boarding, kayaking, waterskiing and so on where humans are in contact with water potentially fouled with fish farm effluent containing whatever chemicals and drugs have been used in aquaculture and organisms with multidrug antimicrobial resistance genes. How would they know if they were at risk or not?

7) The impact on other fisheries and other industries seems under-represented. I joined a submission on florfenicol use focused on trade implications of antibiotic residues that was disallowed as irrelevant about 4 days before the rock lobster fishery was closed. The tourism industry employs more Tasmanians and depends on our 'Clean Green' image, at risk from the rapid expansion of the salmon industry as it is at present.

General concerns:
I would like to comment on these matters:

1) Multi-drug antimicrobial resistance arising from the use of uncontained antibiotics in repeated courses in hatcheries (almost entirely undisclosed) and open water pens (limited delayed disclosure).
2) The increasingly plausible link between the production of the amino acid beta methylamino-L-alanine (BMAA) by cyanobacterium (blue-green algae) and neurodegenerative diseases fuelled by high nutrient loads such as found below flow-through hatcheries, and from agriculture and sewerage pan run-off, including motor neurone disease (MND), and Amyotrophic Lateral Sclerosis/Parkinsonism-Dementia Complex (ALS/PDC) occurring above the in-take of Hobart's drinking water supply.
3) The self-reinforcing cycle connecting effluent to eutrophication to crowding to disease to antibiotic escalation in open but shallow water pens.
4) Climate change as an accelerant of the above risk factors, including a devastating algal bloom given the existing and rising high nutrient load, and the emissions profile of the industry.
5) Social licence and its erosion, with consequences for this inquiry.
6) Opportunities to address these challenges such as removal of effluent to be processed into a safe and valuable secondary resource in nitrogen rich fertiliser.
7) The stated objective of Phase 1 and the need for a genuinely trusted evidence base where the community can see that its legitimate concerns have been genuinely addressed in what has been seen by many as an industry-leaning process. Only robust recommendations for better future safety for us and our environment will 'minimise contested views'.

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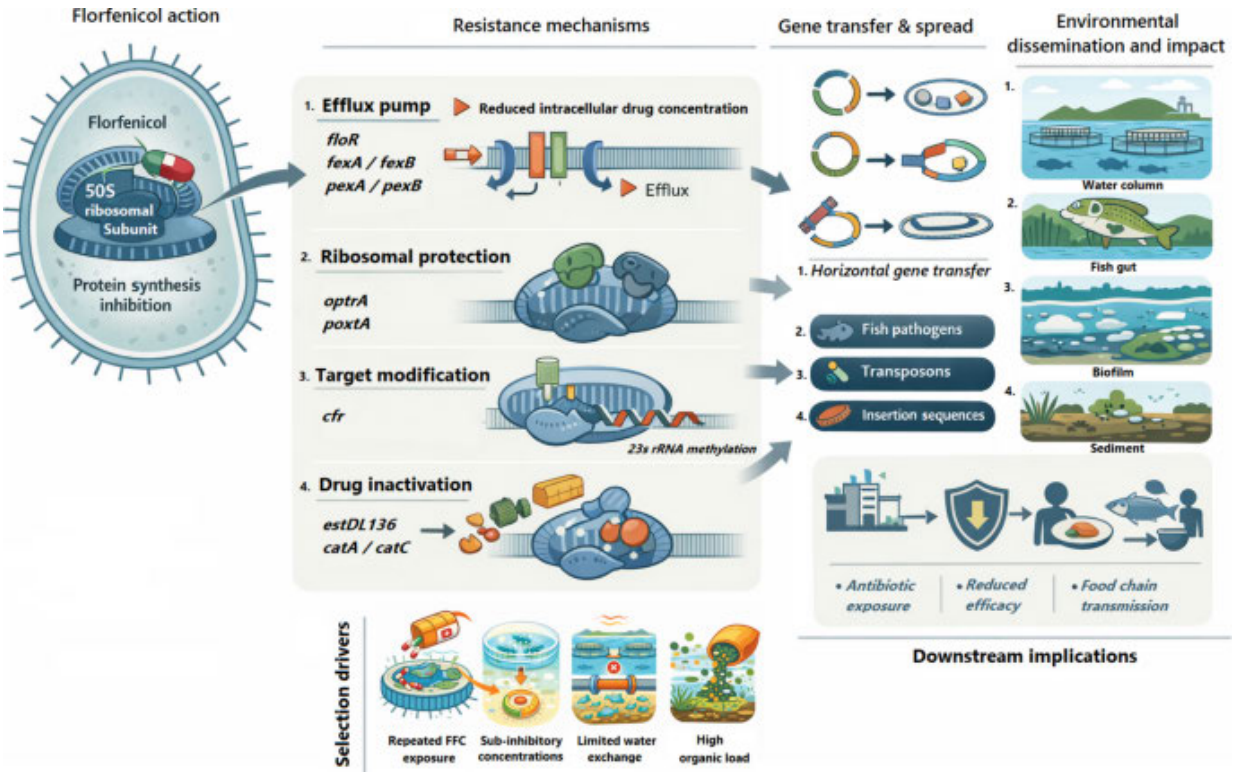
1) Multi-drug (MDR) antimicrobial (AMR) resistance. Here is an example of where the regulatory authorities (the EPA and AVPMA) have been provided with evidence[1] of the research linking exposure to antibiotics including florfenicol and oxytetracycline used here to the development of mobile 'packets' of multidrug resistance genes conferring resistance to antibiotics that those organisms have never met that can then be shared. They have continued to issue the reassurance that humans aren't given florfenicol and direct toxicity is unlikely. This is not the point.
   Here is an infographic from an excellent peer-reviewed high level journal article Abraham and Bardhan Animal Diseases https://doi.org/10.1186/s44149-026-00224-y (2026) 6:15[2]

[1] Previously supplied – letter from me to the AVPMA handed to Lead W Craik.
[2] Previously supplied – article with summary handed to Lead W Craik



Please note the lowest section: ‘Selection drivers’. Despite the lack of transparency around the use of antibiotics in Tasmanian aquaculture, we know there have been repeated episodes of dosing. This dosing is contained in feed, administered for a 10 day course, but sick fish barely eat after day 1, so most of the dose falls out of the pen into open largely shallow water, pre-primed with enormous volumes of organic waste from unmanaged aquaculture effluent including faeces, uneaten feed and bits of dead fish. The EPA has declared the spread of the residual antibiotic creates dilution, as if that meant the dose was less significant – and it is, for direct toxicity. However, it is not direct toxicity we are concerned about. High doses kill the target bacteria, low diluted doses kill the most susceptible bacteria and leave the most resistant to dominate. Each wave of treatment escalates the risk of the development of AMR.

The desire to reach for antibiotics is created by outbreaks of disease, but there are modifiable risk factors in play. See section 4. At the very least there should be monitoring for resistance genes in the environment and in the salmon themselves, and full contemporaneous disclosure of antibiotic usage.

Please note item 1 in the section on resistance mechanisms – eg genes such as floR code for an Efflux pump. This pump removes florfenicol from inside the cell but it is not specific – it also spits out many other antibiotics that it has never met. This and other resistance gene ‘packets’ are mobile and can be handed on by a variety of mechanisms to other kinds of organisms and are already turning up in human consumption foods (Melbourne supermarket salmon and beef – paper from Monash supplied). The antibiotics covered can include quinolones, our strongest ‘in reserve’ antibiotics carefully stewarded in human disease management for serious infections, which include anthrax and plague.

Strains of organisms responsible for human disease with AMR are increasingly being found where lots of antibiotics are used in land and marine farming, including China and Chile. References available.

Multidrug AMR is the Pandora's box of our evolving silent AMR pandemic – except this pandemic will not pass, as there are few alternatives in the pipeline. These infections cannot be treated and the organisms cannot be eradicated. We will be back to pre-antibiotic times of terror when what is currently a manageable skin, chest, urinary tract and any other infection could be fatal. A child with a fever may soon die.
A much more detailed evidence base will accompany the AMA submission in due course.

2) There is increasing concern about the research-based and credible link between BMAA, produced by blue-green algae, and neurodegenerative disorders. These algal blooms occur naturally but they are fuelled by nutrient load and warmth. The flow-through hatcheries as well as agricultural and sewerage pan run-off are providing a nutrient boost and global heating is literally turning up the heat. These diseases – MND and ALS/PDC – are awful. They are extremely costly in human and societal terms. Any modifiable risk factor should be addressed. From the industry point of view, I would think there would be a basis for litigation if the warnings are not heeded. There should not be any flow-through hatcheries least of all above drinking water intakes. The technology to solve this exists, but the industry has declined to follow up. It should have to, and at the very least there should be rigorous, independent monitoring of BMAA levels. [3]
3) The industry self-management is adding to its own difficulties. The siting of more and more pens in shallow waters with limited water flow movement has allowed its own effluent load to create eutrophication and impair local biodiversity. Fish looking for relief from too hot at the top of the pen and no oxygen at the bottom must crowd, stressed, into the middle, creating exactly the conditions for disease outbreaks and the call for more antibiotics – probably new ones as time goes on. Once again, they have been offered an innovative technology by SweetWaters (and maybe others – I only know of this one) but have declined, even though the research base has been done for them. Given we are expecting another hot summer and this is not new news, is the industry expecting to extract what it can and then leave rather than make the investments needed for sustainability? Or are they waiting to be made to act? There are also options others are better qualified to mention, but one would be switching to a fish more suited to these conditions.
4) The south coast of Australia experienced a devastating algal bloom last year. The sheer scale of effluent discharged into our coastal waters does not require a science degree to link to a higher risk of the same happening here. The precautionary principle should apply, and the industry should urgently address the matter of management of its effluent. Climate change is not an unknown and unpredictable risk. It is here and not going away. As scientists have been warning for decades, our addiction to using oil, diesel, gas and oil are the cause and global heating is happening faster than most predictions. The east coast is a marine hotspot. I have not seen any reference to the emissions profile of this industry, but like every other user of diesel generators, emissions must fall. At the very least, the emissions profile should be public and a simple and cheap measure would be the public disclosure of the quantity of diesel purchased per year. (This is a very simple strategy that could be employed across all industries to foster awareness and efforts to decarbonise, more manageable than set targets. 'Commercial in confidence' should not exempt this simple measure.)
5) Contested views and social licence. Salmon farming is ultimately about people as well as fish and the environment. It encompasses the health and well-being of workers, their families and regional communities, together with the wellbeing of people who are genuinely concerned about the health of Tasmanian's waterways and marine environment. Tasmania's rivers, estuaries and coastal waters are central to the lives of many Tasmanians and visitors alike, supporting recreation, boating, sailing, kayaking, swimming, surfing, diving, snorkelling, recreational fishing, tourism, and strong cultural, spiritual and emotional connections with place. A large section of the community is

[3] https://pmc.ncbi.nlm.nih.gov/articles/PMC9997973/ -- summary document on BMAA

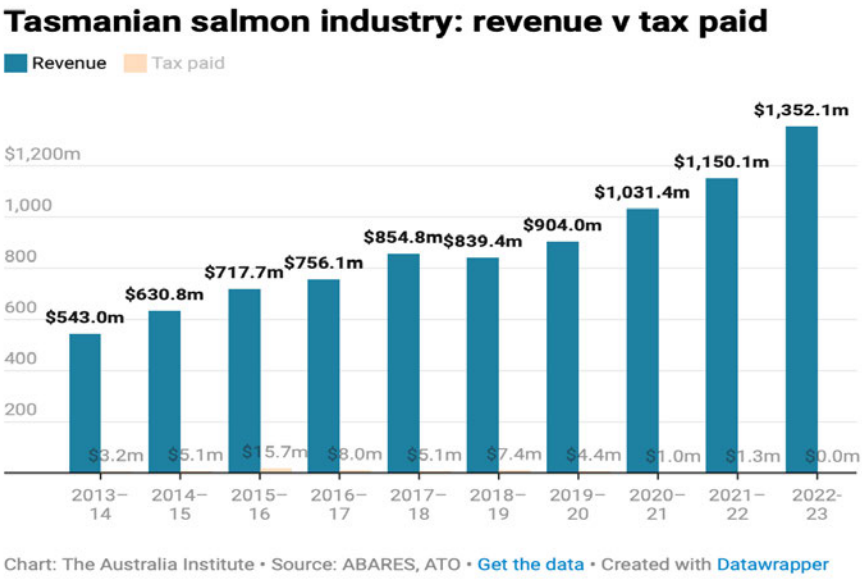
deeply worried about the health of our waterways and marine ecosystems. These concerns are grounded in a desire to protect the environment for current and future generations, to safeguard the biodiversity, and to maintain the natural places that are so fundamental to Tasmania's identity, livelihoods and way of life.
For some of these people, these concerns are associated with significant psychological distress, including what has become widely described as eco-distress, climate anxiety or solastalgia. Alongside this, others experience equally real anxiety about employment, financial security, the viability of regional communities and the future of their jobs. Both perspectives reflect genuine humans concerns that deserve to be recognised and respectfully considered. Unless this happens, contested views cannot be minimised.

In this context, it should be acknowledged that prolonged public conflict and polarisation can itself adversely affect individual and community wellbeing, and continue the erosion of trust in government. Unfortunately, Tasmania has had long-running conflict over forestry, more recently over the Voice campaign, then the stadium proposal, and currently dissent is being stoked by active disinformation on migration. This is why transparent evidence based and widely informed independent conclusions are so important, and dissent cannot be minimised, it must heard and answered. The refusal of the industry to disclose real time use of antibiotics, supported by enough of the Parliament, reassures no-one. 'Nothing to see here' on antimicrobial resistance because 'We did not look' (EPA one liner on AMR monitoring) is not helpful, as an example.

On social license, the CSIRO has conducted significant research:
https://www.sciencedirect.com/science/article/pii/S0308597X25000685
Here is one statement quoted there about social licence:

'… describes the legitimacy afforded to generally extractive industries that have local environmental and social impacts, and where there is a risk that economic benefits will be captured by distant stakeholders.'

This infographic from the Australia Institute, accepting that revenue is not the same as profit, tells a picture that Australians are increasingly resentful of as the story repeats from one extractive industry to another, exploiting our natural resources carelessly for distant profit and relatively few jobs.



https://australiainstitute.org.au/post/tasmanian-salmon-more-revenue-more-pollution-but-always-less-tax/

The social licence issue here with respect to salmon farming is that the informal social contract that constitutes the acceptance by the community of the local impacts of the salmon industry in return for an acceptable level of benefit has not worn well. The direct and indirect benefit ratio of the industry has become less clear with increasing awareness of massive profits going off-shore with little or no tax or commitment to cleaning up after itself. Food security is an important goal, but many Tasmanians no longer believe that salmon is a healthy source of nourishment. Self-regulation has not looked convincing and there is a perception that the industry behaves as if it has nothing to fear in new regulations as Labor and Liberal parties seem to offer unconditional support no matter what this or any other review finds.
This further quote from the CSIRO research fits well with the objective of Phase 1:

> To legitimise agreement, community interests (at least some, or all) need assurances of procedural fairness so that outcomes are deemed "fair by all involved, are transparent and inclusive of diverse perspectives and priorities, allow[ing] the public to access information and debate, and to feel respected and listened to in that process"

https://academic.oup.com/forestry/article-abstract/89/5/489/2199118?redirectedFrom=PDF process

Relevant to the social licence issue is that the industry is heavily reliant on the Australian market, but Australians have a proven willingness to change their consumer behaviour if worrying information becomes mainstream. The public refusal of many restaurants and celebrity chefs to use Tasmanian farmed salmon along with some high-profile writers and many environmental groups may undermine profitability into the future. There is growing dissatisfaction of big extractive industries behaving as if they can continue, as they largely have until now, to write the script for governments and avoid regulatory demands. The failure to pay company tax for years, like most foreign owned gas companies as a comparison, and as cost of living pressures bite, is increasingly undermining social licence to operate. The government is apparently willing to dispense with 1700 jobs - the same number, roughly, as the salmon industry employs.

6) Options to make a difference exist. Moving the pens to deeper water is one, decreasing stocking density is another, and removing the effluent is also possible. A Tasmanian team SweetWaters have been working on this and produced a potential solution for both flow-through hatcheries and open water pens. It would require a small initial investment to prepare for developing a working protype that would cost say 2-5 million, noting that the protype is always the most expensive, but would provide multiple benefits. Removing the effluent would decrease eutrophication and alleviate the oxygen stress on the fish, enabling biodiversity to return. It would also remove the feed with its chemical and possibly antibiotic residues and process it all to produce water, fats and safe nitrogen fertiliser. This circular economy sustainability outcome would help the industry regain some lost social licence and allow it to continue to supply some food security even as the waters warm. I understand that attempts to interest the companies have been met without much interest. SweetWaters have supplied a submission. Their innovation would provide more Tasmanian rural jobs – one of the key levers in the social licence context.

7) The stated objective of Phase 1 has been addressed at points already, but one requirement that needs elaborating is the necessity of much more transparency from industry and government. Trust in governments and institutions is falling, unsurprisingly. A consistent theme as I have had many discussions with individuals and groups is that there is little faith that contributing to yet another inquiry or review will not be yet more wasted hours because nothing will happen. I believe that this would be very detrimental to social cohesion and social licence not just for the industry but for government. Too

many important reviews that have been found unpalatable have been simply ignored. I hope this will not be the case here, and I am very encouraged by the independence of the Study Leads, and thank them for their work.

I am available to provide further resources at any time.

The Study can only achieve its stated aim of minimising contested views if the community sees its legitimate, evidence-based concerns - on antimicrobial resistance, on nutrient discharge and algal bloom risk, on the self-reinforcing cycle connecting effluent to disease to antibiotic escalation, on the under-examined BMAA pathway to neurodegenerative disease risk in Hobart's drinking water supply, on climate change as an accelerant of all of these, and on the psychological cost of watching a valued environment degrade or fearing the loss of an employment pathway - genuinely addressed in its findings. We need a pathway to what we all want – a safer future.