From:	harwoodchris@bigpond.com
To:	Tasmanian Salmon Study Secretariat
Subject:	My feedback on salmon study plan
Date:	Friday, 3 July 2026 12:01:42 PM
Attachments:	Salmon Study - Chris Harwood Suggestions.pdf

July 3, 2026

Submission on Salmon Study Plan

I have read through the Salmon Study Plan 2026, with keen interest.

I have made some suggestions, in the form of comments appended to the Study Plan, that I hope would strengthen the Study and the reception of its findings by the public.

[redacted]

Dr Chris Harwood

[redacted]

[redacted]

Study Plan

Independent Study of the Tasmanian Salmon Industry

May 2026 | Version 2.0

Objective

To undertake a comprehensive independent study of the Tasmanian salmon industry that considers the effectiveness of regulation and management in achieving sustainable outcomes for Tasmania's natural and physical resources, consistent with Tasmania's Resource Management and Planning System.

Prepared by: Dr Wendy Craik AM and Dr Russell Reichelt AO

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Preface

This Plan for the Independent Study of the Tasmanian Salmon Industry ["the industry"] has been developed to address the Terms of Reference [Appendix 1] which emphasises 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.

In 20 years, the industry has increased from 14,500 tonnes in 2003-04 to 86,800 tonnes in 2022-23. Salmon farming in Tasmania currently involves feeding fish in mesh pens anchored in variable shallow coastal waters, with organic waste being released into the receiving environment. Public commentary ranges from removing this type of farming from Tasmania's waters, through to modifying the methods of farming to prevent leakage of organic waste and chemicals, or moving the farms further offshore, or to onshore facilities with zero waste to the ocean.

The industry and government regulators have sought to manage and mitigate these and other impacts, but recent large scale fish death events raise the concerns such catastrophic events have on the environment and other uses of the coastal waters such as tourism, commercial and recreational fishing. Concerns extend beyond the environmental impacts to ethical concerns involving sources of fish feed and the risks of long term environmental harm being amplified by, for example, unrelated changes in the ocean caused by regional impacts of global warming.

We recognise the intensity of views and the legitimate concerns. We aim to assess the scientific basis for environmental assessments and also identify where scientific knowledge is not sufficient to produce a strongly founded risk assessment. This work should identify impacts on the environment, whether those risks can be mitigated and by how much, and whether the damage can be reversed through restoration.

The Terms of Reference extend to identifying international lessons for managing these risks and also recognise the views of those who see the environmental costs being outweighed by the benefits to local communities.

We are publishing the Study Plan now in the interest of public transparency but as we collect information and listen to affected people the Study Plan may change. The Study Plan outlines the current key questions and issues and provides examples (not exhaustive) of the expert sources and stakeholders to be engaged during the study. If the Plan needs to be amended, we will make this clear to the public.

Dr Wendy Craik and Dr Russell Reichelt

Draft

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Overview of study topics

Phase1: Current knowledge, concerns, evidence, risks, threats and responses

Phase 1A: Current status overview, especially industry, environment and public health

Topic #1 Overview of the global salmon industry – the big picture for Australia, Norway, Chile, Scotland, Canada, New Zealand Contributions to global and local demand for protein. Role in food security.

Topic #2 Assessment of environmental values, impacts, and benefits of Salmon Farming in Tasmania and lessons from beyond Australia

Topic #3 Health impacts of salmon farming, including: public health, ecosystem health, wildlife impacts and salmon health.

Topic #4 Detailed examination of Tasmania Salmon Industry Regulation and compare with international regulations for compliance and effectiveness – best practice

Phase 1B: Economic and sociocultural costs and benefits

Topic #5 The direct and indirect contribution of the salmon industry to the Tasmanian economy, including: regional economies, employment opportunities and career pathways, and the industry's role in developing skills and knowledge

Topic #6 The social and cultural benefits and costs to Tasmanian community, including the effect of industry activities on infrastructure, amenity, and Indigenous peoples' knowledge and perspectives for land and sea country

Commented [CH2]: "impacts and benefits" reads to me as being biased towards salmon farming. Why not "costs and benefits"? We have recently seen real monetary costs imposed on lobster fishers as a result of antibiotic residue detection and regional closures.

Commented [CH3]: As well as contributions, there are direct costs, and opportunity costs resulting from the industry. For example impacts on other seafood industries if antibiotic residues affect markets, and impacts on local tourism and mental and physical health of Tasmanian residents through pollution (noise, light, visual, water)

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Phase 2: Climate change, adaptive management for community, government and industry

Topic #7	Climate change threats, impacts and opportunities for adaptation and carbon management.
Topic #8	Contribution of the industry to advancing scientific expertise, innovation and research capacity in Tasmania, including aquaculture science, technology, environmental monitoring, biosecurity and emerging technologies including offshore farming systems, land-based recirculating aquaculture systems, hybrid systems, circular economy innovations including value added production.
Topic #9	Benchmarking Tasmanian salmon industry regulation against global best practice

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Phase 1A

Topic #1: Overview of the global Salmon industry – the big picture for Australia, Norway, Chile, Scotland, Canada, New Zealand. Contributions to global and local demand for protein. Role in food security.

Questions/issues	Expert sources	Engagement
1. What are the current global production volumes of salmon, how do these contribute to global demand for protein, particularly seafood, and how has the market share of major producing nations shifted over the last decade? 2. What are the primary global market drivers, including Environment, Social and Governance requirements, certification schemes like Aquaculture Stewardship Council and Best Aquaculture Practices, and consumer demand for "green" protein? 3. Are there global drivers of change that affect the industry, eg climate change – refer to UN FAO, UN Decade of Ocean Science, UN Global Compact and Regional Fisheries Bodies, UNFCCC. 4. What are the environmental and social challenges identified by the Food and Agriculture Organisation and international NGOs as critical to 'social licence' for global protein production in general and seafood in particular. 5. What are the major health and disease risks and responses facing the global salmon industry? 6. Detail the major issues driving change in global salmon industry in the last five years 7. What are the global directions and opportunities for innovation in the salmon farming industry in progress now? 8. What is Tasmania's competitive advantage in a global salmon industry?	**Lead Experts:** • (University of Stavanger, Norway) – Specialist in global aquaculture economics. • FAO Fisheries Department: Targeted consultation with senior aquaculture officers. • Global Salmon Initiative (GSI) Representatives: Regarding global transparency and sustainability reporting. **Sources of evidence** • **International Bodies**: FAO State of World Fisheries and Aquaculture (SOFIA) reports; World Bank aquaculture projections. • **Industry Handbooks**: Mowi Annual Industry Handbooks; Kontali Analyse market reports. • **Certification Standards**: Technical documents from the Aquaculture Stewardship Council (ASC) and Global Seafood Alliance (BAP). • **International Benchmarks**: Historical performance data from Norway (Directorate of Fisheries), Scotland (Marine Scotland), Chile, Canada, New Zealand	**Targeted Stakeholders** • **International NGO Alliances:** (e.g., WWF International, SeaChoice, Aquaculture Stewardship Council) to discuss global environmental benchmarks. • **Global Retailers:** (e.g., major international seafood buyers) to understand market expectations for sustainable salmon. • **Tasmanian Industry Representatives:** To gather their perspectives on how they view their position in the global market. **Modes of Engagement** • **Direct Meetings:** Consultations with the Global Salmon Initiative (GSI). • **Site Visits/Study Tours:** Not required for this global data-centric topic. • **Public Submissions:** Specific prompts regarding "What international examples of salmon farming should Tasmania learn from?" • **Technical Workshops:** virtual session(s) with the Cawthron Institute and international academic experts.

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Topic #2: Assessment of Environmental Values, Impacts, and Benefits of Salmon Farming in Tasmania and lessons from beyond Australia [see Topic #1]

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
1. What are the natural values in Tasmania affected by salmon farming? What is the current state of benthic and water column health across major farming regions (see EPA locations) 2. What are the measurable impacts on natural values from salmon farming and other human activity on ecosystems both within and upstream or adjacent to salmon farms? 3. What are the measurable impacts of nitrogen and nutrient loading on local marine biodiversity on the sea floor and water above it? 4. How effective are current waste management protocols for hatchery sludge and marine mortalities in meeting contemporary standards? 5. How can terrestrial and freshwater hatchery operations impact local river systems and groundwater?	**Lead Experts:** • (University of Tasmania) – Specialist in marine ecology and reef health. • Cawthron Institute (NZ): Specialists in benthic impact modelling and waste management. • Freshwater Ecology Specialists: To review hatchery discharge impacts. **Sources of evidence** • **Regulatory Data and Environmental Monitoring:** Tasmania Environment Protection Authority environmental monitoring reports, publications, plans and regulatory data and reports; Tasmanian Government's biosecurity logs. • **Research Institutions:** Institute for Marine and Antarctic Studies (IMAS) publications; CSIRO Marine Research reports, Australia's Integrated Marine Observing System. • **Industry Reporting:** Sustainability reports and environmental compliance logs from major operators. • **Citizen Science:** Data from community-led monitoring groups (e.g., Neighbours of Fish Farming) where verifiable. • **Community surveys [where available]:** values, threats and risks from the public perspective.	**Targeted Stakeholders** • **Tasmania Conservation Groups:** (including Environment Tasmania, Tasmania Conservation Trust) regarding specific ecosystem concerns. • **Commercial and recreational fishers, Indigenous Peoples:** Regarding impacts on shared waterways, fish stocks, marine ecosystems, access rights, social and cultural values affected by salmon farming from their point of view. • **Waste Management Industry:** To discuss processing capacity and emerging circular economy models. • **Marine Tourism interests:** To discuss their perspectives on values and impacts affecting their industry's operations in the region **Modes of Engagement** • **In person or video meetings:** Sessions with IMAS researchers and EPA environmental officers; meetings with community, environmental, indigenous groups • **Site Visits/Study Tours:** Inspections of hatcheries and waste processing facilities. • **Public Submissions:** Specific prompts regarding observed changes in local marine environments. • **Technical Workshops:** A session on nutrient modelling and environmental capacity.

Commented [CH4]: I would prefer the word Costs here

Commented [CH5]: Should not antibiotic residues in other marine organisms, including commercial and recreational fish and shellfish species, be mentioned somewhere in this section? This is potentially an issue with major economic consequences

Commented [CH6]: And freshwater salmon hatcheries/nurseries

Commented [CH7]: I am surprised to see no acknowledgement in this section of the Tasmanian Independent Science Council. I found their analysis of eutrophication in Long Bay associated with salmon farming there and its adverse consequences to be highly credible and persuasive. 408f4769221a4ee681623e69858cc901.pdf

Commented [CH8]: I think it is necessary to have public hearings, particularly in local regions where salmon farming is being conducted. Some members of the public may not feel competent or comfortable to make written submissions but may be able to present valuable oral evidence (e.g. long-term coastal residents who have observed local beaches or have dived local reefs for decades, before and after industry build-up and are able to testify on changes such as weed build-up

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Topic #3: Health impacts of salmon farming, including: public health, ecosystem health, wildlife impacts and salmon health.

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
1. What are the primary causes of salmon mortality in Tasmania, and how do current management practices compare to international welfare standards? 2. What are the trends in antibiotic and chemical use in the Tasmanian industry, and, in addition to the environment risks in topic 1, what are the associated risks to public health and the environment? 3. How effective are current biosecurity protocols and disease prevention strategies in mitigating "mass mortality" risks? 4. What is the nature and frequency of wildlife interactions (seals, birds, skates), and are current mitigation strategies (e.g., exclusion netting) meeting best-practice standards? How do other jurisdictions mitigate against wildlife mortality?	**Lead Experts:** • **CSIRO/AAHL/Cawthron** – Specialist in aquatic animal health and biosecurity. • Specialist in animal welfare and standard setting. • **Public Health Toxicologists:** To review the implications of antibiotic use in open-pen systems. • **Ecosystem health toxicologists** **Sources of evidence** • **Government Records:** APVMA; NRE Tasmania (Chief Veterinary Officer) reports; EPA antibiotic use data, therapeutant residual monitoring and environmental risk assessments; 2025 mortality event debrief outcomes. • **Industry Data:** Wildlife interaction logs; mortality rate reporting; vaccination records. • **Expert Research:** CSIRO and IMAS studies on fish health and aquatic biosecurity. • **Public Health Data:** Tasmanian Department of Health monitoring regarding antibiotic resistance and food safety. • **International Data and Analysis:** FAO, International experts, Cawthron and others	**Targeted Stakeholders** • **RSPCA Australia:** Regarding animal welfare standards and auditing. • **Conservation Organizations:** To understand the full range of concerns from those advocating for preventing activities damaging the natural marine ecosystem. • **Animal and Human Medicine Professionals:** To discuss concerns regarding antibiotic use and antimicrobial resistance. • **Industry Veterinarians:** To understand on-the-ground health management challenges. • **EPA:** Considering Environmental Risk Assessment of florfenicol. • **Commercial and recreational fishers** **Modes of Engagement** • **Direct Meetings:** Sessions with the Chief Veterinary Officer, RSPCA, EPA, Inland Fisheries Service (freshwater) and Department of Health. • **Technical Workshops:** A roundtable on "Antibiotic Stewardship and Public Health." • **Public Submissions:** Specific prompts on "Wildlife interactions and community observations." • **Site Visits:** Inspections of health monitoring systems at marine and land-based sites.

Commented [CH9]: I would like to see a specific reference to the issue of animal (salmon) welfare associated with elevated water temperature impacts on salmon. As I understand it, salmon become stressed at water temperatures above 20ºC and such high temperatures may be expected to increase in frequency in Tasmania inshore waters in coming years. Surely this is an animal welfare issue that will increasingly affect salmon farming?

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Topic #4: Detailed examination of Tasmania Salmon Industry Regulation and compare with international regulations for compliance and effectiveness – best practice

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
1. How do the regulatory architectures of Norway, Chile, Scotland, Canada, and New Zealand compare to Tasmania in terms of independent oversight and enforcement powers? 2. What specific metrics are used internationally for "environmental capacity" (e.g., nitrogen caps, biomass limits, fallowing requirements, deoxygenation standards and mitigation) and how are they triggered? 3. How transparent are the compliance and monitoring data in other jurisdictions compared to Tasmania's public reporting standards? 4. How effective are approaches in other jurisdictions in preventing environmental harm? 5. What are the mechanisms for public participation, management of stakeholder concerns, community wide aquatic literacy, and dissemination of outcomes of industry performance on social and environmental issues that have been effective in other jurisdictions or industries? And are there metrics to assess these mechanisms, particularly for stakeholder engagement and issue management, including regulatory mechanisms and those led by non-government groups? 6. How does the industry, in Australia and internationally, assess, manage and communicate with the public in the event of major farmed salmon mortality or broadscale environmental threats to farmed salmon health and are there regulation examples to draw on from other industries in Australia or internationally?	**Lead Experts:** • (University of Bergen) – Specialist in international aquaculture law and the Norwegian regulatory model; and experts in regulation and implementation from other countries • **Administrative Law Specialists and organisations:** To review the independence and effectiveness of regulatory decision-making. **Sources of evidence** • **Legislative Documents:** Relevant Tasmanian legislation including the *Marine Farming Planning Act 1995*, Norway's *Aquaculture Act*, Scotland's *Aquaculture and Fisheries Act*, etc. • Environmental Management and Pollution Control Act (EMPCA), Environmental Standards for Marine Finfish Standards 2023. Environmental Licences. • **Regulator Reports:** Compliance and enforcement statistics from the EPA (Tas), Matilsynet (Norway), and SERNAPESCA (Chile). Environment Protection Authority (2022) A Review of Tasmanian and International Regulatory Requirements for Salmonid Aquaculture. • **OECD & World Bank Reviews:** Independent assessments of national regulatory quality and ease of doing business in the salmon aquaculture sector. • **Parliamentary Inquiries:** Reviewing the 2019 Tasmanian Finfish Inquiry and similar reviews in Scotland (2018) and Canada (2022).	**Targeted Stakeholders** • **Tasmanian Regulators:** (EPA, NRE Tasmania) to discuss operational challenges and current enforcement capabilities. • **Community Groups:** To understand concerns regarding the perceived "closeness" of regulators and industry. • **Legal Experts:** To discuss the integration of aquaculture regulation within the resource management and planning system? • **International Regulators:** Virtual roundtables with peers from the "Big Five" nations. **Modes of Engagement** • **Direct Meetings:** Sessions with the EPA and Salmon Tasmania. • **Site Visits/Study Tours:** Meetings with regulatory staff at regional field offices. • **Public Submissions:** Focused questions on "What specific regulatory changes would increase your confidence in industry oversight?" • **Technical Workshops:** A session dedicated to comparing "Environmental Capacity" metrics across jurisdictions.

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Phase 1B

Topic #5: The direct and indirect contribution of the salmon industry to the Tasmanian economy, including: regional economies, employment opportunities and career pathways, and the industry's role in developing skills and knowledge

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
1. What is the total direct and indirect Gross State Product contribution of the salmon industry to the Tasmanian economy? 2. How is the industry's workforce distributed regionally, and what is the "multiplier effect" for local small businesses in those areas? 3. What is the industry's role in providing structured career pathways and vocational skills (Vocational and Educational Training) in regional Tasmania? 4. To what extent does the industry invest in local infrastructure or support community-based economic projects?	**Lead Experts:** **Independent Economists** – Specialist in the Tasmanian economy, and expertise in environmental valuation • **Skills Tasmania:** Regarding regional training and career pathway data. **Sources of evidence** • **Government Data:** Tasmanian Department of Treasury and Finance economic reports; ABS Labour Force statistics. • **Industry Data:** Payroll and procurement data from major operators; Salmon Tasmania economic impact statements. • **Academic Research:** UTAS, Institute of Marine and Antarctic Studies, School of Economics papers on regional development and salmon industry economic contribution. • **Regional Development Reports:** RDA Tasmania (Regional Development Australia) assessments. • **Commissioned research**	**Targeted Stakeholders** • **Regional Councils:** (e.g., Huon Valley, West Coast, Tasman) to discuss local economic dependency and benefits. • **Small Business Chambers:** Regarding the impact of industry procurement on the local supply chain. • **Tasmanian Seafood Industry Council (TSIC):** To discuss broader seafood economy interdependencies. • **Workforce Representatives:** (e.g., AWU) to discuss job security and career development. **Modes of Engagement** • **Direct Meetings:** Sessions with regional mayors and business leaders. • **Site Visits/Study Tours:** Meetings with regional staff at processing facilities. • **Public Submissions:** Inviting local businesses to share their experience as suppliers to the industry. • **Technical Workshops:** A session with Treasury to finalise economic modelling assumptions.

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Topic #6: The social and cultural benefits and costs to the Tasmanian community, including the effect of industry activities on infrastructure and amenity, and indigenous peoples' knowledge and perspectives for land and sea country.

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
1. How has the growth of the salmon industry impacted regional infrastructure, particularly road maintenance and public port access? 2. What are the measurable impacts and mitigation of salmon farming operations on coastal amenity (specifically noise, light pollution, and visual landscape)? 3. To what extent does industry workforce growth influence regional housing markets and the availability of essential services? 4. What are the broader community benefits (e.g., sponsorship, infrastructure co-investment) and how are these distributed across regional Tasmania? 5. Indigenous perspectives on salmon industry activities – costs and benefits to sea country and indigenous communities	**Lead Experts:** • **Social Science Researchers:** Specialists in regional development and social impact assessment (e.g., from the University of Tasmania and others). • **Infrastructure Planners:** Independent consultants with experience in primary industry logistics. • **Indigenous groups** **Sources of evidence** • **Local Government Records:** Council infrastructure plans; noise/light complaint logs from the West Coast, Huon, and Tasman Councils. • **State Records:** State Growth data on heavy vehicle movements; housing market statistics. • **Community Surveys:** Reviewing previous independent surveys and social license research (e.g., CSIRO/UTAS community perception studies). • **Industry Reports:** Records of community investment, sponsorships, and infrastructure contributions.	**Targeted Stakeholders** • **Regional Councils:** (e.g., Huon Valley, Tasman, West Coast, George Town) to discuss infrastructure and amenity pressures. • **Regional Residents' Groups:** (e.g., Community associations in farming regions) to capture lived experience. • **First Nations Groups:** Regarding the benefits and impact of coastal industry activities on "sea country" and cultural heritage amenity. • **Tourism Industry:** Regarding the impact of salmon aquaculture on Tasmania's "clean-green" tourism brand and coastal landscapes. • **EPA:** Regarding noise and light regulations as part of Environmental Licence Conditions and Environmental Standards. **Modes of Engagement** • **Direct Meetings:** Sessions with regional Mayors and General Managers, and EPA • **Public Forums:** Meetings in key salmon industry hubs. • **Public Submissions:** Inviting residents to share "Case Studies" of local social benefits or costs. • **Field Observations:** Night-time and daytime amenity assessments in sensitive coastal areas.

Commented [CH10]: I would suggest adding specific reference to the impact of salmon hatcheries on water treatment costs and downstream river health

Commented [CH11]: Impacts are not limited to these specific aspects. It is inevitable, in my view, that eutrophication associated with loading of the water column with dissolved and suspended N, P etc. consequent to large-scale salmon farming has resulted in increased fouling of beaches from algae, and degradation of reefs and underwater environments in shallow inshore waters. Salmon farming is fundamentally different to other aquaculture industries such as shellfish farming, which do not pollute local waters with thousands of tons of nutrient-rich excess feed and fish faeces. Large-scale farming of salmon in coastal waterways inevitably leads to eutrophication, arising from this nutrient load which disperses into the surrounding waterways driving growth of algae, jellyfish swarms and other types of environmental damage. In my view the only way to mitigate this impact is to reduce the scale of the industry and to remove it from shallow, poorly circulating inshore waters.

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Phase 2

Topic #7: Climate change threats, impacts and opportunities for adaptation and carbon management.

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
1. What are the projected ocean temperature and dissolved oxygen trends for Tasmania's primary salmon farming regions over the next 10, 20, and 50 years? 2. How do these projections align with the biological thermal limits and oxygen requirements of Atlantic Salmon? 3. What are the likely effects of industry selective breeding program in context of climate change and thermal tolerance of Tasmanian Atlantic salmon? 4. What are the feasible opportunities for the industry to mitigate against projected ocean temperature and dissolved oxygen trends? 5. What is the current carbon footprint of the Tasmanian salmon industry (Scope 1, 2, and 3) compared to international protein benchmarks? 6. What are the feasible opportunities for the industry to participate in carbon sequestration or "blue carbon" initiatives? 7. How is the industry impacted by regulatory changes in sustainability reporting nationally and internationally?	**Lead Experts:** • (IMAS) – Specialist in climate change impacts on marine life and species redistribution. • (CSIRO) – Specialist in marine climate impacts and adaptation – Futures of Seafood project [BE-CRC]. • Consult Australia's **Climate Change Authority** and COP31 team in AusGov for experts in this area. ANU and some Cooperative Research Centres in Australia also have experts. • The **Australian Climate Service** has recently completed a Climate Risk Assessment at national level. • **Carbon Accounting Specialists:** To verify industry emission profiles. **Sources of evidence** • **Scientific Reports:** IPCC Special Report on the Ocean and Cryosphere; CSIRO Marine Climate Change Report Cards. • **Academic Research:** IMAS studies on the "East Australian Current" and its impact on Tasmanian coastal waters. IMAS Scoping study into adaptation of the Tasmanian salmonid aquaculture industry to potential impacts of climate change • **Industry Data:** Real-time water temperature and oxygen monitoring data from farm sites. • **International Case Studies:** Adaptation strategies from Norway and Chile.	**Targeted Stakeholders** • **Climate Scientists:** To verify the robustness of regional oceanographic projections. • **Environmental NGOs:** To discuss the intersection of climate change and ecosystem resilience. • **Industry Strategy Teams:** To understand current investment in selective breeding for thermal tolerance. • **Renewable Energy/Waste Experts:** Regarding opportunities for carbon management in the supply chain. **Modes of Engagement** • **Direct Meetings:** Sessions with BoM and CSIRO climate modelling teams. • **Technical Workshops:** A session on "Climate-Proofing the Industry." • **Public Submissions:** Prompts regarding "Community observations of climate-related changes in coastal waters." • **Site Visits:** Reviewing on-farm monitoring technology.

Commented [CH12]: Associated with points 1-4, I believe it would be pertinent to develop a "triage list" of those inshore waters most likely to become unfeasible for salmon farming and the dates by which this is projected to happen, given projected rates of sea temperature increase. This would assist Government and the public in considering the long-term future of the industry.

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Topic #8: Contribution of the industry to advancing scientific expertise, innovation and research capacity in Tasmania, including aquaculture science, technology, environmental monitoring, biosecurity and emerging technologies including offshore farming systems, land-based aquaculture RAS, hybrid systems, circular economy innovations including value added production.

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
1. What is the total annual investment (direct and indirect) in salmon-related R&D in Tasmania? 2. How has the industry's presence influenced the scale and international reputation of Tasmanian research institutions (e.g., IMAS, UTAS)? 3. What specific technological or scientific innovations have been developed in Tasmania as a result of the salmon industry, and are these being utilized elsewhere? 4. To what extent does the salmon industry innovation contribute to Tasmania's broader biosecurity and environmental monitoring capabilities?	**Lead Experts:** • Specialist in marine research capacity and industry-science partnerships. • **Innovation Specialists:** Experts in primary industry R&D and technology transfer. • **International Peer Reviewers:** (e.g., from SINTEF, Norway) to benchmark Tasmania's innovation output. **Sources of evidence** • **Research Data:** FRDC (Fisheries Research and Development Corporation) grant histories; University of Tasmania R&D reports. • **Institutional Records:** IMAS and CSIRO partnership agreements and publication metrics. • **Industry Innovation Logs:** Patents, proprietary technology developments, and specialized monitoring systems. • **Economic Data:** Analysis of "innovation spillovers" into other sectors (e.g., wild fisheries monitoring).	**Targeted Stakeholders** • **Research Institutions:** (IMAS, CSIRO, UTAS) regarding the value of industry partnerships. • **Technology Providers:** Local Tasmanian companies developing salmon aquaculture technologies (sensors, software, equipment). • **Government Regulators:** Regarding the use of industry-developed science in regulatory decision-making. • **Innovation Agencies:** (e.g., AusIndustry) to discuss the broader impact on Tasmania's "Blue Economy." **Modes of Engagement** • **Direct Meetings:** Sessions with R&D Managers at major salmon companies and IMAS leadership. • **Technical Workshops:** A session on "The Future of Tasmania's Marine Innovation Ecosystem." • **Site Visits:** Demonstrations of local technology deployments at marine sites. • **Public Submissions:** Inviting researchers to share "spillover" benefits they have observed in other marine sectors.

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(Topic #8 continued)

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
5. What are key areas for assessing emerging technologies such as the technical and financial feasibility of: a. Offshore farming systems b. Land-based recirculating aquaculture systems (RAS) c. Hybrid (RAS/Offshore) production models d. Circular economy innovations (value-added production, downstream processing, bioproducts)	**For question 5: Lead Experts:** • **RAS Specialists:** (e.g., from Denmark or the Freshwater Institute, USA). • **Offshore Engineering Experts:** Specialized marine engineers with experience in high-energy sea states. • **Circular Economy Analysts:** Experts in industrial symbiosis and bioproduct development. **For question 5: Sources of Evidence:** • **International Technical Data:** Reports from SINTEF (Norway) and major RAS providers (e.g., AKVA, Billund). • **Pilot Program Results:** Data from existing Tasmanian land-based hatchery expansions and international offshore trials (e.g., Ocean Farm 1). • **Economic Modelling:** Collaboration with Treasury to assess the investment environment for high-tech aquaculture	

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Topic #9: Benchmarking Tasmanian salmon industry regulation against global best practice

Questions/issues	Expert sources [not limited to this list]	Engagement [not limited to this list]
1. Based on Phase 1 benchmarking, what are the essential components of an "independent" and "fully authorised" regulatory authority for aquaculture? And would this assist the Tasmanian government, industry and community? 2. How can the Tasmanian Resource Management and Planning System (RMPS) and EMPCA be updated to better integrate aquaculture with other marine users and ecosystem protection? 3. What are the global best-practice standards for real-time public reporting of environmental and fish health data? 4. What adaptive management triggers (e.g., the "Traffic Light" system) are most appropriate for Tasmania's warming coastal environment? 5. Are there features of cost recovery models operating in other jurisdictions that could be applied in Tasmania?	**Lead Experts:** • **Governance and Public Policy Specialists:** Experts in institutional design and regulatory oversight. • **International Marine Management Peers:** Consultation with former or current leads of major international aquaculture regulators. • **RMPS Specialists:** Legal experts familiar with Tasmania's integrated planning system. **Sources of Evidence** • **Consolidated Findings:** The Evidence Repository and Information Papers from Phase 1 (Topics 1–8). • **Technology Assessments:** The feasibility reports from Phase 2a (Topic 9). • **International Governance Models:** Detailed case studies of the Norwegian, Scottish, and Canadian regulatory reforms. • **RMPS Objectives:** The statutory requirements of the Tasmanian Resource Management and Planning System.	**Targeted Stakeholders** • **Members of Parliament:** To ensure that any regulatory approach addresses the transparency and independence concerns of the legislature. • **Industry Leadership:** (Salmon Tasmania) to discuss the operational and investment implications of any regulatory approach. • **Conservation Organizations:** To verify that the model meets contemporary environmental protection standards. • **General Public:** Through a final round of public comment on future options." **Modes of Engagement** • **Policy Roundtables:** High-level sessions with regulators, industry, and environmental leaders. • **Public Webinars:** Presenting the draft management directions for community feedback. • **Direct Consultations:** One-on-one sessions with the Commissioning Authority (Premier/Ministers). • **Parliamentary Briefings:** Updating MPs on future options.

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Appendix 1 - Independent Study of the Tasmanian Salmon Industry Terms of Reference summary

ToR - Salmon Industry Independent Study Download the full document at the link: Download PDF (164.9KB)

Objective

To undertake a comprehensive independent study of the Tasmanian salmon industry that considers the effectiveness of regulation and management in achieving sustainable outcomes for Tasmania's natural and physical resources, consistent with Tasmania's Resource Management and Planning System.

Background

On 17 August 2025, the Premier, the Minister for Primary Industries and Water, and the Minister for Environment announced that the Tasmanian Government will launch an independent study of the salmon industry.

Building on evidence from previous inquiries and existing scientific literature, this study will provide a comprehensive evidence base for consideration of the socioeconomic and environmental impacts and contributions of the industry, contemporary regulatory frameworks and management practices and international benchmarking.

The study will help inform future policy decisions that seek to balance a sustainable industry with positive outcomes for the Tasmanian environment and community.

The Study has 4 parts:

1.0 Impact Analysis
- 1.1 Environmental
- 1.2 Social, Economic and Scientific

2.0 Regulatory and Management Framework
3.0 Future Opportunities and Challenges
4.0 Regulatory Costs

Phase 1 will focus on consolidating and presenting expert evidence on the social, environmental and economic impacts and benefits of the Tasmanian salmon industry, including materials associated with previous Tasmanian and national inquiries. 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.

Phase 2 will build on the work of Phase 1, providing expert advice on the risks and benefits of the salmon industry in Tasmania and the contemporary regulatory framework required for managing the opportunities and risks for the industry, the community and the environment. It should include examples of international best-practice and advice on the strategic directions for the Tasmanian salmon industry; and include an analysis of the feasibility of future opportunities, such as offshore or land-based production models for the industry.