The Senate

Environment and Communications References Committee

Regulation of the fin-fish aquaculture industry in Tasmania

August 2015

ISBN 978-1-76010-276-0

Committee address
PO Box 6100
Parliament House
Canberra ACT 2600
Tel: 02 6277 3526
Fax: 02 6277 5818
Email: ec.sen@aph.gov.au
Internet: www.aph.gov.au/senate_ec

This document was printed by the Senate Printing Unit, Parliament House, Canberra

Committee membership

Committee members

Senator Anne Urquhart, Chair	ALP, Tasmania
Senator Anne Ruston, Deputy Chair	LP, South Australia
Senator Joe Bullock	ALP, Western Australia
Senator James McGrath	LP, Queensland
Senator the Hon Lisa Singh	ALP, Tasmania
Senator Larissa Waters	AG, Queensland

Substitute member for this inquiry

Senator Peter Whish-Wilson (AG, Tasmania) for Senator Larissa Waters (AG, Queensland)

Participating member for this inquiry

Senator Jacquie Lambie	IND, Tasmania

Committee secretariat

Ms Christine McDonald, Committee Secretary
Mr Colby Hannan, A/g Principal Research Officer
Ms Fattimah Imtoual, Senior Research Officer
Ms Kirstyanne Cattanach, Research Officer
Mrs Dianne Warhurst, Administrative Officer

Table of Contents

List of Abbreviations

ABS	Australian Bureau of Statistics
APVMA	Australian Pesticides and Veterinary Medicines Authority
ASC	Aquaculture Stewardship Council
BAP	Best Aquaculture Practice
BEMP	Broadscale Environmental Monitoring Program
BOD	biochemical oxygen demand
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEA	Doctors for the Environment Australia
DO	dissolved oxygen
DPIPWE	Department of Primary Industries, Parks, Water and Environment (TAS)
DSS	Decision Support System
EA	Environmental Assessment
EDO	Environmental Defenders Office
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPA	Environment Protection Authority (TAS)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
FHI	Fish Health Inspectorate
FRDC	Fisheries Research and Development Corporation
FTE	Full-time equivalent
GRI	Global Reporting Initiative
GSI	Global Salmonid Initiative
HDPE	high density polyethylene
HVTTC	Huon Valley Trade Training Centre
IMAS	Institute for Marine and Antarctic Studies
IMS	Invasive Marine Species
LMRMA	*Living Marine Resources Management Act 1995* (TAS)
LUPAA	*Land Use Planning and Approvals Act 1993* (TAS)

MFDPs	Marine Farming Development Plans
MFP Act	*Marine Farming Planning Act 1995* (TAS)
MHEMP	Macquarie Harbour Environmental Monitoring Plan
MHMFDP	Macquarie Harbour Marine Farming Development Plan
MIC	Marine Inspection Cleaner
NRM	Natural Resource Management
NRS	national residue survey
NWQMS	National Water Quality Management Strategy
PCBs	polychlorinated biphenyls
RD&E	research, development and extension
RMPS	Resource Management and Planning System
SALTAS	Salmon Enterprise of Tasmania Pty Ltd
STT	Seafood Training Tasmania
TasFRAB	Tasmanian Fisheries Research Advisory Body
Tassal	Tassal Group Ltd
TPC	Tasmanian Planning Commission
TSFA	Tasmanian Scalefish Fisherman's Association
TSGA	Tasmanian Salmonid Growers Association
TSGA-IPA	Industry Partnership Agreement
UTAS	University of Tasmania
WQIP	Water Quality Improvement Plans

Chapter 1

Introduction

1.1 On 24 March 2015, the Senate referred the following matter for to the Environment and Communications References Committee (the committee) for inquiry and report:

> The regulation of the fin-fish aquaculture industry in Tasmania, with particular regard to:
>
> (a) the adequacy and availability of data on waterway health;
>
> (b) the impact on waterway health, including to threatened and endangered species;
>
> (c) the adequacy of current environmental planning and regulatory mechanisms;
>
> (d) the interaction of state and federal laws and regulation;
>
> (e) the economic impacts and employment profile of the industry; and
>
> (f) any other relevant matters.[1]

1.2 The committee was initially required to report by 10 August 2015. However, on 10 August 2015, the Senate granted an extension of time to report until 18 August 2015. On 18 August 2015, the Senate agreed to a further extension of time to report until 21 August 2015.

Conduct of the inquiry

1.3 The committee advertised the inquiry on its website and in *The Australian* newspaper. The committee also wrote to relevant organisations and individuals inviting submissions by 1 June 2015. The committee received 103 submissions, which were published on the committee's website and are listed at Appendix 1.

1.4 The committee held public hearings relating to its inquiry in Hobart on 15 and 16 July 2015. As well as witnesses from organisations and the Tasmanian Government, the committee allocated time during the hearing on 15 July for individuals who had provided submissions, with an opportunity to make short statements to the committee. A list of witnesses who appeared at the hearings may be found at Appendix 2.

---

1 *Journals of the Senate*, 2013–15, No. 88–24 March 2015, p. 2371.

1.5 On 14 July 2015, the committee undertook an inspection of Tassal's Rockwood hatchery, a tour of fish farming activities on the Huon River and an inspection of Tassal's Huonville Smokehouse. While undertaking its tour of the Huon River, the committee was able to watch monitoring activities being conducted by Aquenal Pty Ltd.

1.6 The committee wishes to thank the Tasmanian Salmonid Growers Association Ltd, Tassal Group, Huon Aquaculture, Petuna Seafoods Tasmania and Aquenal Pty Ltd for their assistance in facilitating the committee's inspection. The inspection was invaluable in providing the committee with an understanding of the operation of the salmonid industry and the way in which companies integrate activities from hatchery to processing the end product.

Acknowledgement

1.7 The committee would like to thank all the organisations, individuals and government departments that contributed to the inquiry.

Structure of the report

1.8 This chapter outlines the conduct of the inquiry. Chapter 2 sets out background information relating to the fin-fish aquaculture industry in Tasmania, the Tasmanian Government regulatory framework, research and development activities, third-party certification of the fin-fish companies and public perception of the industry in Tasmania.

1.9 Chapters 3 and 4 address waterway health. Issues covered in chapter 3 include adequacy of monitoring, access to information and independence of monitoring, analysis and research. The discussion in chapter 4 canvasses issues including in-water cleaning of nets, broadscale impacts on rocky reefs and hatcheries on inland rivers. This chapter also includes comments on threatened and endangered species and marine debris.

1.10 Chapter 5 outlines the current environmental planning and regulatory mechanisms pertaining to the fin-fish aquaculture industry and the adequacy of these mechanisms.

1.11 Chapter 6 canvasses the interaction of state and federal laws and regulation and, in particular, comments on fin-fish aquaculture in Macquarie Harbour.

1.12 Chapter 7 examines the fin-fish aquaculture industry's contribution to the Tasmanian economy and employment.

1.13 Chapter 8 examines issues related to the possible impact of the fin-fish aquaculture industry on human health.

Chapter 2

Overview of the fin-fish aquaculture industry in Tasmania

2.1 This chapter provides an overview of the fin-fish aquaculture industry including its development, companies involved in the industry and the Tasmanian Government regulatory framework. The committee also canvasses research and development activities and third-party certification of fin-fish aquaculture companies. Finally, the committee discusses community perception of the industry.

Development of the fin-fish aquaculture industry in Tasmania

2.2 The Tasmanian salmonid marine farming industry has its origin in the establishment of fresh water trout farms at Bridport in 1964 and at Russell Falls in 1974. This led to the first successful seawater trial at Nubeena (on the Tasman Peninsula) in the early 1980s, where rainbow trout hatched in fresh water were transferred to seawater for grow out.

2.3 Atlantic salmon ova were imported from NSW in 1984 and the first commercial harvest of 55 tonnes of Atlantic salmon occurred in 1985–86. The industry was established as a joint venture agreement between the State Government, a Norwegian company, Noraqua, and local salmon growers. The agreement allowed the transfer of technology from Noraqua to assist in the development of the industry which was considered a crucial factor in the early days of development.[1]

2.4 The agreement also established Salmon Enterprises of Tasmania Pty Ltd (SALTAS) which was responsible for the culture and distribution of smolt to its shareholders. Until the late 1990s, SALTAS was the only producer of Atlantic salmon smolt in the State. A number of private companies have now established hatcheries to produce Atlantic salmon smolt.[2]

2.5 Over the decade to 2013–14, there was a significant expansion of salmonid production in Australia from 16 686 tonnes in 2003–04 to 41 615 tonnes in 2013–14. Almost all of this growth is a result of the expansion of salmon aquaculture farms in Tasmania.[3]

2.6 Currently, eight entities hold salmonid marine farming leases within Tasmanian state waters. There are four main companies, Tassal Group Ltd (Tassal), Huon Aquaculture Group, Petuna Pty Ltd, and Van Diemen Aquaculture Pty Ltd of which Petuna Pty Ltd is a major shareholder. Three of these companies are fully

---

1 Tasmanian Government, *Submission 33*, pp 1–2.

2 Tasmanian Government, *Submission 33*, p. 2.

3 Department of Agriculture, *Submission 10*, p. 3.

vertically integrated and also provide product for a number of businesses who value add for niche markets.[4]

2.7 There are 48 licenced salmonid farming leases in Tasmanian State waters which occupy a total of 2196 hectares in six marine farming development plan areas. Farming takes place in south east Tasmania including the Huon River estuary and D'Entrecastaux Channel; in Macquarie Harbour on the west coast; and the Tamar Estuary in the north of the State.

Figure 2.1: Marine lease areas in Tasmania

Source: Tasmanian Government, Submission 35, p. 3.

2.8 In the south east, leases are held by Tassal, Huon Aquaculture and Alstergren Aquaculture although Alstergren does not currently undertake any marine farming operations. In Macquarie Harbour, leases are held by Tassal, Huon Aquaculture, Petuna and Russfal Pty Ltd (subleased to Tassal and Huon Aquaculture). Van Diemen Aquaculture Pty Ltd holds a marine farming lease in the Tamar River.

4 Tasmanian Seafood Industry Council, *Submission 19*, p. 2.

2.9 There are currently 18 licenced salmonid inland fish farm activities in Tasmania. Two have not been developed. The two SALTAS hatcheries are joint ventures between industry and government with the Tasmanian Government being a minor shareholder. Additionally, there is one new activity in construction and two new development proposals under review by the Environment Protection Authority. Of the existing activities, four are currently undergoing development works.[5]

State government regulatory framework

2.10 The Tasmanian Government stated that the National Strategy for Ecologically Sustainable Development was endorsed by the Council of Australian Governments in 1992. The strategy provides the objectives for aquaculture development. The three core objectives are :

- to enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- to provide for equity within and between generations; and
- to protect biological diversity and maintain ecological processes and life support systems.[6]

2.11 The strategy is implemented under the guidance of a number of ecological and development principles. In its submission, the Tasmanian Government stated:

> The strategy emphasises that a balanced approach is required for ecologically sustainable development and these guiding principles and core objectives need to be considered as a package. No objective or principle should predominate over the others.
>
> Management judgments have to be based on the available scientific evidence of risk, and the levels of short and long-term impacts that are acceptable in the socio-economic as well as ecological contexts.[7]

2.12 The environmental planning and management system in Tasmania is established under the Resource Management and Planning System (RMPS). The RMPS is based on principles of sustainable development and aims to achieve sustainable outcomes for the use and development of the State's natural and physical resources.[8]

2.13 In 1995, the Tasmanian Government passed legislation to provide a comprehensive regulatory regime for the management of aquaculture operations and protection of the environment. The legislation addresses both marine farming and the

---

5 Tasmanian Government, *Submission 35*, p. 3.

6 Tasmanian Government, *Submission 35*, p. 4.

7 Tasmanian Government, *Submission 35*, p. 4.

8 Tasmanian Government, *Submission 35*, p. 5.

freshwater farming operations of the salmonid industry as well as other aquaculture activities. Following the passing of this legislation, a development process for marine farming was initiated, with a number of marine farming regions around the State being identified as marine farming development areas.

Marine farming operations

2.14 The regulation of marine salmonid farming operations is primarily managed under the *Marine Farming Planning Act 1995* (MFP Act) and *Living Marine Resources Management Act 1995* (LMRMA). The Acts are administered by the Marine Farming Branch of the Department of Primary Industries, Parks, Water and Environment (DPIPWE).

2.15 The Tasmanian Government stated:

> The *Marine Farming Planning Act 1995* and the *Living Marine Resources Management Act 1995* provide an integrated and robust framework that ensures the ongoing sustainable management of the salmonid farming industry in Tasmania.[9]

Marine Farming Planning Act 1995

2.16 The MFP Act aims to achieve well-planned sustainable development of marine farming activities, having regard for the need to:

- integrate marine farming activities with other marine uses;
- minimise any adverse impact of marine farming activities;
- set aside areas for activities other than for marine farming activities;
- take account of land uses; and
- take account of the community's right to have an interest in those activities.[10]

2.17 The MFP Act, and associated regulations, provide for:

- zoning areas of State waters, through marine farming development plans (MFDPs), where future marine farming operations may occur;
- amendments to MFDPs; and
- reviews of MFDPs.

2.18 MFDPs contain management controls to manage and mitigate negative effects of marine farming operations. Management controls may include provisions relating to:

- the activities that may take place;

---

9 Tasmanian Government, *Submission 35*, p. 17.

10 Tasmanian Government, *Submission 35*, p. 5.

- specific marine farming activities that may take place;
- the environmental monitoring that must be undertaken by a lease holder;
- the limits for any water quality indicators;
- the restrictions on noise, light, or presence in a marine farming zone;
- the size of structures in a marine farming zone; and
- any other appropriate matter.[11]

2.19 In preparing an MFDP, or an amendment to an existing MFDP, the proponent is required to prepare an Environmental Impact Statement (EIS). The EIS must disclose any available information relating to the environmental impact of a proposal and contain information appropriate to the significance of the proposal to the environment.[12]

Marine Farming Planning Review Panel

2.20 The Marine Farming Planning Review Panel is established under the MFP Act to assess draft plans and draft amendments to plans, for example, expansions. There are eight members of the Panel.

2.21 Prior to 2011, the Panel was able to make binding determinations. In doing so, the Panel was required to take into account public submissions, the recommendation of the Marine Farming Branch of DPIPWE and the sustainable development objectives of the MFP Act. With amendment of the MFP Act in late 2011, the Panel may now only make a recommendation to the minister in relation to a draft amendment to a MFDP.[13]

Living Marine Resources Management Act 1995

2.22 All marine farming operations must be licensed under the LMRMA. Each licence includes environmental conditions specific to that licence to ensure that the marine farming operation is sustainable and does not have an unacceptable impact on the marine environment.

2.23 Conditions that expand on the provisions of management controls are contained in marine farming licences issued for salmonid marine farming. The Tasmanian Government stated that licences are renewed annually and conditions may be varied at any time, which provides flexibility in the management of ongoing farming operations.[14]

---

11 Tasmanian Government, *Submission 35*, pp 17–18.

12 Tasmanian Government, *Submission 35*, p. 17.

13 EDO Tasmania, *Submission 70*, p. 8.

14 Tasmanian Government, *Submission 35*, p. 5.

Freshwater farming operations

2.24 The *Inland Fisheries Act 1995* regulates freshwater salmonid farming operations. The freshwater operations supply salmon smolt or rainbow trout from freshwater hatcheries for on-growing at sea.

2.25 The Inland Fisheries Service is responsible for the regulation of hatcheries and freshwater fish farms under the *Inland Fisheries Act 1995*.[15]

2.26 The Director of Inland Fisheries has power to grant fish farm licences to grow declared fish in inland waters. If Atlantic salmon is involved then the agreement of the minister administering the LMRM Act is required. Fish farm licences contain conditions to regulate matters including the species of fish permitted to be grown; the location and size of the farm; the source of supply of fish stock; notification requirements; disease management; and measures to prevent the escape of fish from the farm. Licences can also include conditions that require participation in the DPIPWE salmonid health surveillance program and monitoring of water quality and effluent.[16]

2.27 In addition to the Inland Fisheries Act, the *Land Use Planning Approvals Act 1993, Environmental Management and Pollution Control Act 1994* and the State Policy on Water Quality Management 1997 apply to inland farming operations.[17]

2.28 The *Environmental Management and Pollution Control Act 1994* is administered within the Environment Protection Authority (EPA) Division of DPIPWE and establishes the authority of the Director, EPA, and the Board of the EPA to conduct the assessment of level 2 and 3 activities, as defined the Act. The Director also has authority to 'call-in' activities for assessment by the Board. The Act is also subject to the objectives of the Resource Management and Planning System.

2.29 The Act defines serious and material environmental harm and environmental nuisance and lists offences and penalties. The EPA Division, on behalf of the Director, regulates Environment Protection Notices that are issued by the Director, and conducts enforcement action for offences against the Act, including non-compliance with Environment Protection Notices or environmental permit conditions.[18]

15 Tasmanian Government, *Submission 35*, p. 5.

16 Tasmanian Government, *Submission 35*, p. 13.

17 Tasmanian Government, *Submission 35*, p. 14.

18 Tasmanian Government, *Submission 35*, p. 14.

Adaptive management

2.30 The MFP Act, marine farming lease conditions, management controls contained within MFDPs and marine farming licence conditions are the principal instruments for managing marine farming activities. These provide for the adaptive management framework adopted by the Tasmanian Government which stated:

> Both the planning and operational regulatory frameworks applied to the salmonid farming industry employ recognised best practice adaptive management principles. These frameworks takes into account the dynamic nature of the environment within which marine farming occurs and accordingly provide the capacity and flexibility to manage future marine farming operations in an environmentally sustainable manner.[19]

2.31 Dr John Whittington, Secretary, DPIPWE, added that:

> …we are very confident that our adaptive management approach to regulation is the right approach and the sensible approach...it is an approach that relies on assessing the environment where the farming is to occur. It involves an iterative process of decision making, monitoring and evaluation, and that feeds back into decision making. As a regulatory agency, we are confident that this adaptive management approach provides a sound way for the industry to be managed and to grow.[20]

2.32 Support for the Tasmanian Government's adaptive management approach was provided by the Tasmanian Seafood Industry Council which commented:

> Despite some differences, the entire seafood industry shares one common value: to continue to operate as a fully sustainable seafood industry. Our capacity to achieve this is underpinned by world's best ecosystem based and adaptive regulatory framework. As a foundation, this framework requires comprehensive scientific input into the decision-making processes.[21]

2.33 The pre-development and operational components of the adaptive management cycle employed for ongoing environmental management and regulation of operation of operational fin-fish marine lease areas were provided in the Tasmanian Government's submission.

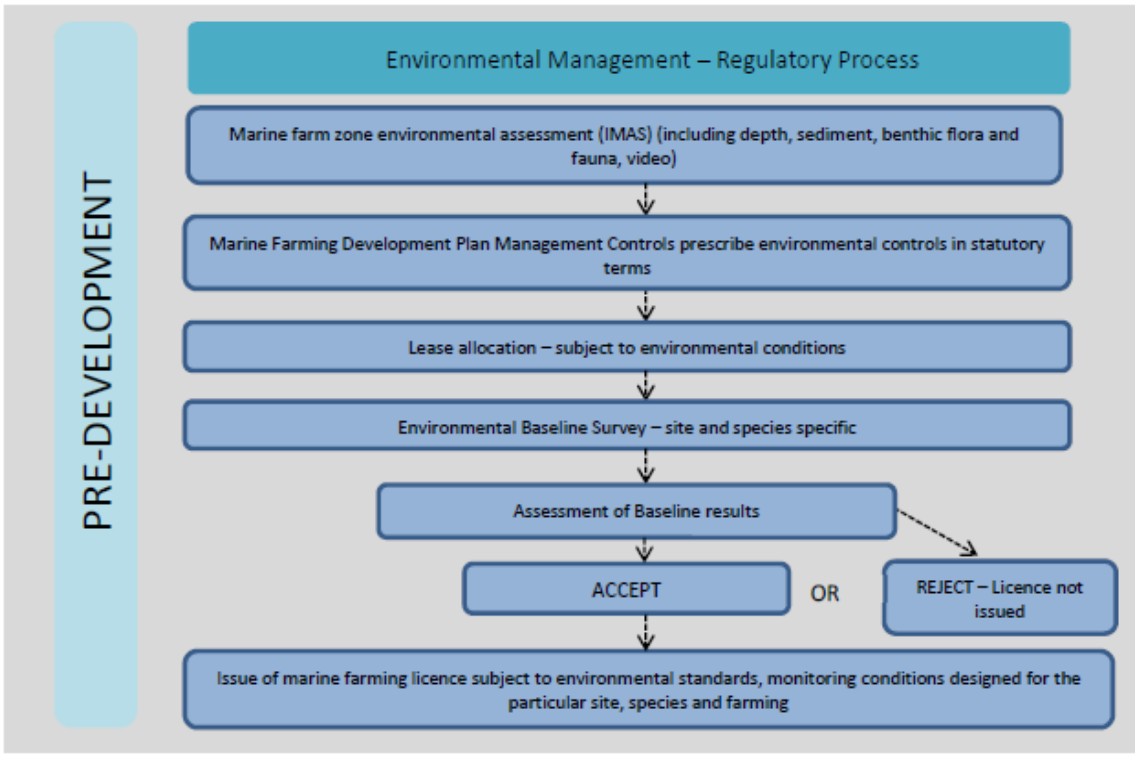
---

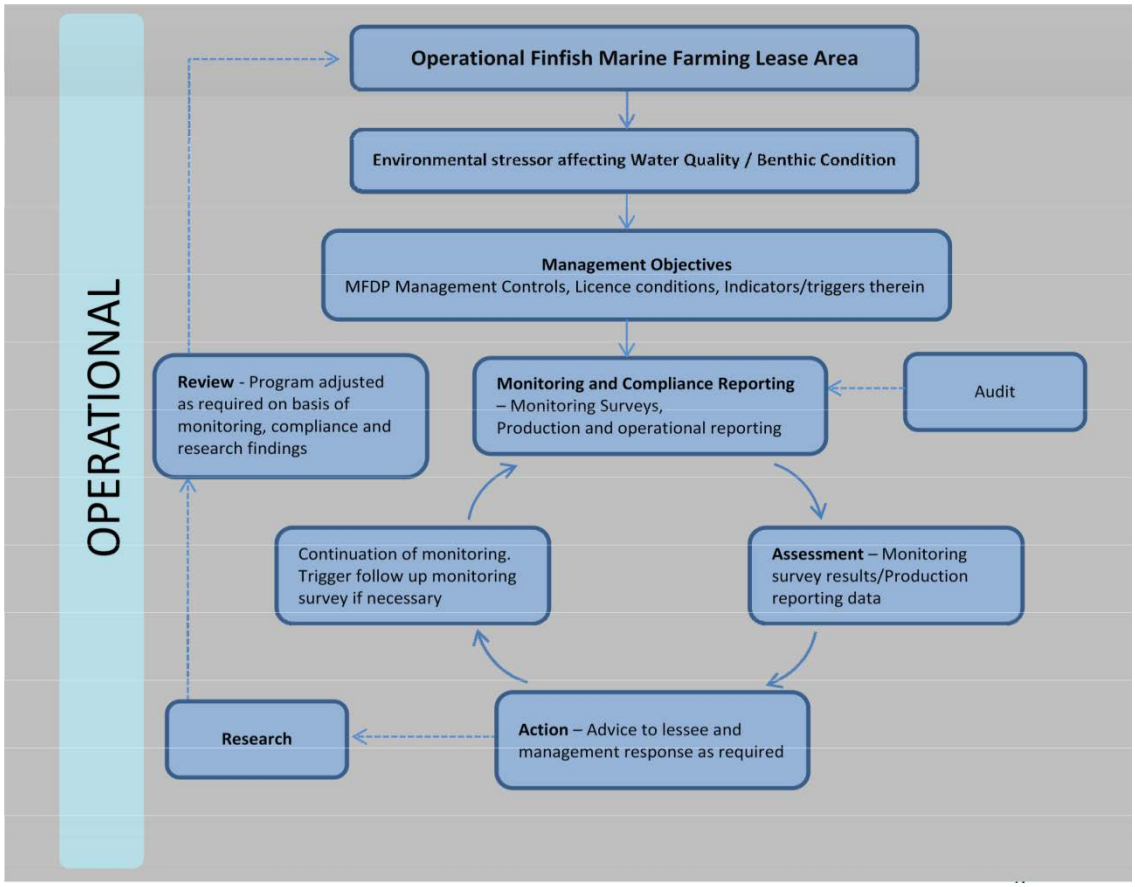
19 Tasmanian Government, *Submission 35*, p. 18.

20 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 2.

21 Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard*, 15 July 2015, p. 46.

Figure 2.2: Pre-development and operational components





Source: Tasmanian Government, Submission 35, p. 9.

Research and development

2.34 Research and development plays a key role in the salmonid industry in Tasmania. Dr Whittington, DPIPWE, commented that 'we are really fortunate in Tasmania to have a very strong and vibrant research and environmental consultant community'.[22]

2.35 Industry and government work in collaboration with CSIRO, the University of Tasmania's Institute for Marine and Antarctic Studies (IMAS), other interstate and international research institutes and small independent consultancies. Research projects are undertaken across all aspects of the industry: environment; breeding and genetics; and fish health and welfare.

2.36 The Fisheries Research and Development Corporation (FRDC) is a co-funded partnership between the Commonwealth Government and the fishing and aquaculture industry.[23] The FRDC invests in research, development, and extension (RD&E) activities that support aquaculture, commercial fishing, Indigenous fishing and recreational fishing. The FRDC partners with other organisations that have the necessary capabilities to undertake the varied specialised activities. The FRDC facilitates the extension, adoption and commercialisation of research and development and evaluates the benefits.[24]

2.37 Through the FRDC, the Commonwealth and industry have invested significantly in the development of the Tasmanian fin-fish aquaculture industry. Between 1991 and 2015, 96 research projects valued in excess of $25 million were undertaken in support of the sustainable development of the fin-fish aquaculture industry. The FRDC has 20 active research projects across the Tasmanian fin-fish aquaculture sector and, as at June 2015, there were a further four approved projects awaiting commencement.[25]

2.38 Principal areas of investment have included:

- environmental management;
- industry development;
- farm management, animal health and disease mitigation; and
- threatened and endangered species.[26]

---

22 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 2.

23 See Department of Agriculture, *Submission 10*, p. 7 for details of funding arrangements.

24 Fisheries Research and Development Corporation, *Submission 8*, p. 4.

25 Fisheries Research and Development Corporation, *Submission 8*, p. 1; see also Annex 1.

26 Fisheries Research and Development Corporation, *Submission 8*, pp 4–5.

2.39 The FRDC's research and development investment decisions in the Tasmanian fin-fish aquaculture sector are made in consultation with the Tasmanian Fisheries Research Advisory Body (TasFRAB) and the Tasmanian Salmonid Growers Association (TSGA) under the Industry Partnership Agreement (TSGA-IPA).[27]

2.40 The TSGA also pointed to the significant investment by industry in research and development with the salmonid industry contributing in excess of $200 million in recognised research expenditure to a broad range of topics over the last 30 years. This was predominantly through co-partnering with UTAS and CSIRO. Current research projects are valued at $5.6 million.[28] The TSGA submitted that, with further contributions from the FRDC, supportive research bodies and organisations and businesses associated with the industry, the total industry expenditure on research and development is in excess of $275 million.[29]

2.41 IMAS, and its predecessors, has over the last 20 years undertaken research which has significantly contributed to knowledge of environmental impacts and interactions of fin-fish aquaculture in Tasmania. IMAS commented that it provides independent advice and understanding to support decisions regarding the management and regulation of the salmonid farming industry and has been central to the development, implementation, and review of the aquaculture environmental monitoring programs currently employed in Tasmania. IMAS added that its 'researchers have played key roles in both identifying and responding to "knowledge gaps" and will continue to do so in the future'.[30]

2.42 In its submission, IMAS outlined the development of its research focus for the industry and commented that initially, local scale benthic impacts were the focus, and research was integral to developing management controls. With research suggesting that farming in the Huon River/D'Entrecasteaux Channel region was approaching capacity, concern then shifted to broadscale effects of dissolved wastes. A limit on further development was imposed, and a Broadscale Environmental Monitoring Program (BEMP) initiated that has since been highlighted as world's best practice. IMAS noted that concern now focuses on potentially adverse interactions between marine farming and reefs, and on declines in oxygen in Macquarie Harbour. IMAS is currently providing research advice on these issues as part of the adaptive management process.[31] These issues are discussed further in chapters 4 and 6.

2.43 One of the main bodies providing research for aquaculture related issues is IMAS. IMAS research is often undertaken in collaboration with other organisations

27 Fisheries Research and Development Corporation, *Submission 8*, p. 5.

28 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 26.

29 Tasmanian Salmonid Growers Association, *Submission 33*, p. 19.

30 Institute for Marine and Antarctic Studies, *Submission 20*, p. 2.

31 Institute for Marine and Antarctic Studies, *Submission 20*, p. 2.

and it stated that it responds to concerns raised not only by industry and government, but also the broader community and matters identified by IMAS researchers. IMAS commented that 'in making management recommendations we have sought to promote multi-use management solutions and to provide advice that supports sustainable management practices for all stakeholders'. IMAS added that its 'aquaculture research is acknowledged as world class, and our environmental research has been identified as world's best practice in international standards…and is regularly cited in relation to the development of aquaculture management strategies globally'.[32]

2.44 The IMAS submission provides a comprehensive review of research undertaken in relation to the salmonid industry.

2.45 An experimental aquaculture facility has been established at the IMAS campus, Taroona. Collaborative aquaculture research, particularly with the Atlantic salmon industry, will be undertaken. It is the only facility in the South Hemisphere for large production sized fin-fish.[33]

2.46 In commenting on the research resources available to the aquaculture industry, Dr Adam Main, Chief Executive Officer, TSGA, noted that the industry was fortunate in not only being able to access the resources of CSIRO but also the University of Tasmania:

> We have been able to tap into that knowledge set, that ability, that think tank on marine science for 30 years. That is not understating the influence of the Institute for Marine and Antarctic Studies or UTAS more generally. There are not only the marine scientists, but the economists and the social scientists. We have been so lucky in regard to having all of that at our fingertips and to be able to incorporate that in with the regulator to make sure that we get a system that is robust and world's best. As much as there is a pull factor for us to be demonstrating that we are the best, there is a significant push factor within the industry and within the companies to achieve that for themselves.[34]

International certification of the industry

2.47 Tasmanian salmonid companies participate in third-party sustainability certifications. The TSGA noted that third-party certifications are robust, transparent and independent. They require companies to comply with numerous standards that cover environmental impacts; fish health and disease management; sustainability of feed ingredients; wildlife management; employee safety and working conditions;

---

32 Institute for Marine and Antarctic Studies, *Submission 20*, p. 3.

33 University of Tasmania, 'Good progress on $6.5m Taroona aquaculture facility', 25 February 2015 http://www.utas.edu.au/latest-news/utas-homepage-news/good-progress-on-$6.5m-taroona-aquaculture-facility (accessed 28 July 2015).

34 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 37.

transgenic animals; escapes; energy efficiency and biosecurity; as well as the mandatory regulations required by the government. The TSGA stated that these voluntary standards typically have higher requirements than Commonwealth and state regulations.[35] Dr Main, TSGA observed that:

> When you bring in the community aspect and you bring in some of the other environmental measures which are not required under the currently regulatory framework, it is a push from industry to strive even further and harder past the agreed regulatory framework.[36]

2.48 The TSGA noted that certification procedures include auditing, with the auditors also having the opportunity to bring in third parties to review procedures and data, make comments and provide direction on the practices of the company.[37]

2.49 The cost of gaining international certification is significant with the industry spending $0.5 million per annum.[38] However, the TSGA commented that:

> …the extra compliance costs involved may be offset by increased production through the reduction of mortality from disease and stress, and increased growth under better environmental conditions. Certified products also have greater market access and can obtain a higher market price.[39]

2.50 Companies make their own decision about which certification they wish to obtain.[40] The Tasmanian salmonid companies participate in the following certification schemes:

- Best Aquaculture Practices (BAP) – Van Diemen Aquaculture, Tassal and Petuna;
- Global G.A.P. – Huon Aquaculture;
- Global Salmonid Initiative (GSI) – Huon Aquaculture;
- Aquaculture Stewardship Council (ASC) – Tassal; and
- Global Reporting Initiative (GRI) – Tassal.[41]

2.51 The TSGA submission provides a summary of the key aspects of the ASC, BAP and Global GAP schemes which is provided below.[42]

---

35 Tasmanian Salmonid Growers Association, *Submission 33*, p. 31.

36 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 33.

37 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 32.

38 Tasmanian Salmonid Growers Association, *Answers to questions on notice*, No. 4.

39 Tasmanian Salmonid Growers Association, *Submission 33*, p. 27.

40 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 32.

41 Tasmanian Salmonid Growers Association, *Submission 33*, pp 28–29.

Table 2.1: Comparison of industry certification and accreditation schemes

Requirement of Standard	Aquaculture Stewardship Council (ASC)	Best Aquaculture Practices (BAP)	Global GAP
Third party certification body	✓	✓	✓
Audit reports made publicly available	✓	-	-
Local and national legal requirements and regulations			
Compliance with local and national legal requirements and regulations	✓	✓	✓
Local biodiversity and ecosystem function			
Benthic Biodiversity and benthic effects	✓	✓	✓
Water quality	✓	✓	✓
Nutrient release from production	✓	✓	✓
Critical or sensitive habitats and species	✓	✓	✓
Interactions with wildlife	✓	✓	✓
Biosecurity			
Biosecurity Management	✓	✓	✓
Area Management Agreement	✓	✓	✓
Escapes Management	✓	✓	✓
Resource Use			
Third party certification of feed suppliers	In development	-	✓
Raw materials in feed	✓	✓	✓
Non-biological waste from production	✓	✓	✓
Non-therapeutic chemical inputs	✓	✓	✓
Energy consumption and GHG emission accounting	✓	-	✓
Fish Health			
Animal welfare	✓	✓	✓
Fish Health Management Plan	✓	✓	✓
Dedicated Fish Health professionals	✓	✓	✓
Stocking densities	-	✓	✓
Responsible disposal of mortalities	✓	✓	✓
Controls on chemical, therapeutant and antibiotic use	✓	✓	✓
Maximum level of viral disease-related mortality	✓	-	-
Maximum unexplained mortality rate	✓	-	-
Harvest, transport and handling criteria	✓	✓	✓
Social Responsibility			
Workplace Health and Safety criteria	✓	✓	✓
Human Resources criteria (discrimination, access to union, wages, conflict resolution)	✓	✓	✓
Contractor management criteria	✓	✓	✓
Education and training criteria	✓	✓	✓

42 Tasmanian Salmonid Growers Association, *Submission 33*, Appendix 4, pp 47–48.

Stakeholder Engagement			
Community Engagement criteria	✓	✓	✓
Indigenous Engagement criteria	✓	✓	-
Assessment of company's impact on access to resources	✓	✓	✓
Freshwater			
Smolt Production	✓	-	✓
Third party certification of smolt suppliers	-	-	✓
Food Safety			
Food safety criteria	✓	✓	✓
Transparency of farm-level performance data			
Requirement for transparency of farm-level performance data	✓	-	o
Publicly available information			
Lethal Wildlife Interactions	✓	-	o
Unidentifiable transmissible agents	✓	-	-
OIE-notifiable disease detected on farm	✓	-	-
Estimated Unexplained Loss (EUL) by production cycle	✓	-	-
Therapeutic Treatments	✓	-	o

o Represents information made publicly available which is not a requirement of the certification

Source: Tasmanian Salmonid Growers Association, Submission 33, pp 47–48

2.52 The industry pointed to the substantial benefits arising from third-party certification including that certification acts 'as a driver for achieving ongoing improvements in environmental performance'.[43] The TSGA added that 'the attainment of third-party sustainability certification has also fostered a transformation of attitudes and abilities within the companies to consider management at the ecosystem level'.[44] In addition, the TSGA commented that certification supports industry growth, helps to develop and maintain markets, helps consumers to make informed decisions and provides evidence to a range of stakeholders that the industry is acting responsibly and sustainably.[45]

2.53 The TSGA also pointed to the transparency aspects of certification. Dr Main commented that certification requires companies to provide large amounts of information and 'a huge amount of trust on behalf of the company to open up their books and all of the information, warts and all, and let the auditors have a look at it'.[46]

2.54 Other witnesses also commented on third-party certification of the industry. Ms Jessica Feehely, EDO Tasmania, commented:

43 Tasmanian Salmonid Growers Association, *Submission 33*, p. 31.

44 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 11.

45 Tasmanian Salmonid Growers Association, *Submission 33*, pp 20, 31.

46 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 32.

> …the fact that industry is going through these processes is commendable. They are globally recognised and they are quite stringent. As for whether or not that then means that they meet the criteria under the Tasmanian legislation, I cannot say, but you would hope that any global certification would be equally rigorous.[47]

2.55 Both WWF-Australia and the Tasmanian Abalone Council commented specifically on certification by the ASC. WWF-Australia stated that it considered the ASC standard to be 'the most credible, independent, third-party certification for responsible aquaculture' and that 'the ASC provides a high social and environmental standard for salmon aquaculture globally'. While noting that certification is not a substitute for an effective regulatory regime, WWF-Australia commented that certification provides 'third-party validation of compliance and an additional means to implement a stringent set of checks and balances on environmental impacts, as well as providing consumers with assurance that the food they eat is responsibly produced according to third-party standards'.[48]

2.56 Mr Dean Lisson, Tasmanian Abalone Council, also supported the ASC and commented that the Council believes that, of all the third-party certification systems for aquaculture, the ASC is probably the most independently robust. While not agreeing that the ASC 'is 100 per cent perfect', Mr Lisson commented that 'it stacks up well against all of the other third-party certification systems'.[49]

2.57 The Tasmanian Abalone Council commented that the ASC is 'a form of assessment that is positive for Tasmania' and aligns with the Tasmanian Abalone Council's aim of both the salmonid and abalone industries 'flourishing as it brings together all areas of compliance with a final certification that seeks to drive accountable improvements in environmental and social responsibility'.[50] The Council concluded that the current Tasmanian regulatory regime 'could be further strengthened through Government endorsement of the ASC as the preferred accreditation framework for Salmonid farming in Australia'.[51]

Committee comment

2.58 Tasmanian fin-fish aquaculture companies have gained a range of third-party certifications of their operations. The committee considers that third-party certification provides additional confidence to stakeholders that the aquaculture industry is

---

47 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, pp 59–60.

48 WWF-Australia, *Submission 13*, p. 1.

49 Mr Dean Lisson, Chief Executive, Abalone Council Tasmania, *Committee Hansard*, 16 July 2015, pp 18–20.

50 Tasmanian Abalone Council, *Submission 74*, p. 13.

51 Tasmanian Abalone Council, *Submission 74*, p. 14.

committed to environmental, biosecurity, fish health and social responsibility standards.

2.59 There a number of third-party certifications available and each company makes its own decision about which one it will seek to obtain. However, the committee notes that the Aquaculture Stewardship Council certification was supported by some submitters and that it includes standards for publicly available information including lethal wildlife interactions and therapeutic treatments.[52]

Community perception

2.60 The issue of community perception of the fin-fish industry was discussed extensively in evidence, particularly in regard to the negative perception of monitoring activities and transparency of regulation.

2.61 For example, the Kingborough Council commented that while it appeared that environmental impact monitoring and reporting of the salmon industry has improved significantly over the last decade, there appears to be an 'ongoing perception that the industry is not sustainable and that a steady degradation of the waterways is occurring'.[53] In addition, the community considers that the 'approval process is predetermined' and 'the industry is monitoring itself'.[54] The Council commented that this had arisen as the outcomes of monitoring activities are not adequately articulated in a manner that is readily available and understood by the community.

2.62 The Kingborough Council went on to suggest that there was a need for improved communications from the industry, particularly in reporting on monitoring or scientific activities, so that the community can understand what is occurring. Mr Gary Arnold, Kingborough Council, elaborated:

> The scientific data needs to be gathered and communicated—sure, we all agree with that—but it also needs to be communicated in a way that is easily understood for people who are not necessarily endowed with a scientific background. We feel, from feedback from our community, that that is the main point we can make as advocates on their behalf. They need to be convinced that the improvements that the scientific community and the industry talk about are in fact understood by them, which does not appear to be the case.[55]

2.63 Kingborough Council suggested that the regulator could make himself available to engage directly with the community. The Council noted that the state

---

52 Tasmanian Salmonid Growers Association, *Submission 33*, p. 48.

53 Kingborough Council, *Submission 1*, p. 1.

54 Mr Gary Arnold, General Manager, Kingborough Council, *Committee Hansard*, 15 July 2015, pp 13, 15.

55 Mr Gary Arnold, General Manager, Kingborough Council, *Committee Hansard*, 15 July 2015, p. 15.

Auditor-General undertakes such an activity by attending audit panel meetings of council.[56]

2.64 Councillor Rosalie Woodruff also raised concerns about community consultation. Councillor Woodruff noted that in the recent past, companies have appeared to be favouring more constructive community engagement and negotiation. However, this willingness appears to have diminished recently with 'discussions with residents about serially problematic issues' being stalled.[57]

2.65 In response to these concerns, Mr Chris Dockray, Chairman, TSGA, acknowledged that the industry has to work hard to ensure that the community comes along with industry as it expands.[58] In this regard, the TSGA outlined the industry's stakeholder engagement activities:

> The industry continually engages with key stakeholders to ensure the calibre and relevance of regulations and the ongoing development environmentally and socially responsible practices. The industry has developed and initiated a modern and adaptive stakeholder engagement approach to ensure that there are ample opportunities for communities, interest groups and other stakeholders to engage in a range of consultative processes and discussions in relation to marine farming management and ongoing industry development.[59]

2.66 Dr Main, TSGA, added that there are some strong voices in the Tasmanian community that held a negative view of the industry. Dr Main went on to cite a 2014 study which found that:

> …90 per cent of people answered either 'yes; strongly in favour' or 'yes; somewhat in favour' to the question: are you in favour or against the aquaculture industry in general? So that was Tasmania. In Australia—mainland—it was 78 per cent plus 17, so it is even more than 90 per cent. We do have significant support from our community—and we have to keep working with them on that.[60]

2.67 The Tasmanian Seafood Industry Council provided its view on the engagement of the fin-fish industry with the community. Mr Julian Harrington stated that the industry has an 'open and transparent community relationship'. Mr Harrington noted that the fin-fish industry holds forums to discuss planning developments as well as being involved in a diverse range of community programs, projects and

---

56 Mr Gary Arnold, General Manager, Kingborough Council, *Committee Hansard*, 15 July 2015, p. 16.

57 Councillor Rosalie Woodruff, *Submissio*n *37*, p. 1.

58 Mr Chris Dockray, Chairman, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 27.

59 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 6.

60 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 37.

sponsorships. Mr Harrington concluded that 'relative to the seafood industry they would be the standout performers for community engagement'.[61]

2.68 A further mechanism allowing the engagement of the community and stakeholders was the conference hosted in 2012 by EDO Tasmania. The conference looked at the experience of marine farming planning and operation in Tasmania and internationally. Participants included scientists, Tasmanian Conservation Trust and the TSGA.[62] Ms Jessica Feehely, EDO Tasmania, commented that the conference was held as a consequence of community concerns about lack of transparency and lack of public debate about the industry. Ms Feehely, stated that:

> ….we saw the conference as an opportunity to bring together all the stakeholders—both the industry stakeholders concerned and also industry and government—to have a conversation about what the industry looks like, what the community concerns are and how industry is responding to those concerns…
>
> As much as anything, it was a conversation starter. It certainly performed that role. It highlighted areas where the regulation in New Zealand and Canada is something that we would want to emulate. It also identified lots of areas where the Tasmanian regulatory framework is in fact working quite well.
>
> It certainly was not a conference that was designed to bash the industry; it was quite the opposite. It was an opportunity for the industry to talk about where it plans to go and think about how we might want to design our laws to make sure that happens effectively.[63]

Committee view

2.69 The committee notes the efforts by the industry to actively engage with stakeholders and the community generally and to provide information on its operations that is accessible and easily understood. The committee also notes the activities of other stakeholders in engaging with the industry and applauds the EDO Tasmania's efforts to bring together stakeholders to discuss issues of concern under the auspices of the 2012 conference on marine planning and operation.

2.70 The committee considers a greater understanding of industry activities would be beneficial, particularly as the industry seeks to expand its operations. One avenue of achieving this would be by making available a wider range of information about marine farming monitoring and regulatory activities, particularly those undertaken by the Tasmanian Government. This matter has been considered in chapter 3 of the report.

---

61 Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard*, 15 July 2015, p. 50.

62 'Managing Marine Farming – Have We Achieved Best Practice?', March 2012.

63 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 54.

Chapter 3

Waterway health data

Introduction

3.1 Waterway health is a key issue for fin-fish aquaculture as the industry relies on the quality of water it uses. Waterway health is also a key issue for other stakeholders given the potential for environmental harm if aquaculture operations are not adequately regulated and monitored.

3.2 To ensure that the health of waterways is maintained, extensive monitoring of areas in which the fin-fish industry operates is undertaken both as a regulatory requirement and as part of the normal operational practices of fin-fish aquaculture companies.

3.3 Many of the submissions received by the committee expressed concern about the monitoring of waterway health in areas where fish farming occurs, in particular the adequacy and availability of data.[1] The following discussion outlines the monitoring regimes and addresses the issues raised in evidence by concerned stakeholders and the responses from the Tasmanian Government and industry stakeholders.

Adequacy and availability of data on waterway health

3.4 As discussed in chapter 2, Tasmanian marine farming operations are regulated through the *Marine Farming Planning Act 1995* (MFP Act) and the *Living Marine Resources Management Act 1995* (LMRMA). Together, these two Acts aim to achieve the well-planned sustainable development of marine farming activities and the sustainable management of Tasmania's living marine resources. The Tasmanian Government noted that, in order to achieve these goals, an adaptive management approach has been adopted so that there is an assessment of the environment where farming is to occur and an iterative process of decision making, monitoring and assessment.[2]

3.5 The pre-development and operational components of the adaptive management approach were outlined in the Tasmanian Government's submission.[3] In the pre-development phase, marine farming development plans (MFDPs) are established. In doing so, targeted zone assessments are undertaken by the Institute for Marine and Antarctic Studies (IMAS). These assess substrate type, habitat distribution, bathymetry and benthic flora and fauna. If required, additional surveys

---

1 See for example, Australian Marine Conservation Society, *Submission 9*, p. 1.

2 Tasmanian Government, *Submission 35*, pp 4–5.

3 Tasmanian Government, *Submission 35*, pp 8–9; see also chapter 2.

target threatened species. The MFDPs contain management controls to manage and mitigate negative effects of marine farming operations. Management controls include provisions relating to environmental monitoring and management of marine farming operations.[4]

3.6 Licences to farm fish are required under the LMRMA. A baseline environmental survey must be undertaken prior to the commencement of marine farming operations. The licence contains specific provisions in relation to environmental monitoring and management of marine farming operations. The Tasmanian Government noted that in many cases, conditions contain specific conditions that expand on the provisions of management controls, defining environmental standards and outlining reporting and monitoring requirements. Environmental standards prescribe relevant indicators and trigger levels for ongoing environmental management.[5]

3.7 The Tasmanian Government also stated that decision making is informed not only by the outcomes of statutory monitoring and compliance assessment, but also through information provided by industry, research institutes or collected through programs within the Department of Primary Industries, Parks, Water and Environment (DPIPWE) such as the Environment Protection Authority (EPA) Division of DPIPWE.[6]

Waterway monitoring and management framework

3.8 There are two aspects of waterway monitoring: assessment of benthic condition and water quality in MFDP areas. These monitoring programs are subject to a consistent management framework. Collection and analysis of samples for monitoring is undertaken by a range of consultants employed by companies or by the companies themselves. The data from monitoring is reported to the regulator. Monitoring is also subject to auditing by the regulator.[7]

Benthic condition

3.9 Benthic condition monitoring is undertaken to assess and manage the potential effects of particulate organic waste material (fish faeces, waste fish feed and in situ cleaning effluent) on benthic health in, and around, marine farming lease areas. Environmental parameters must be monitored in the lease area, 35 metres outside the boundary of the marine farming lease area and at any control site(s) in accordance with the requirements specified in the relevant marine farming licence. In addition, a

4 Tasmanian Government, *Submission 35*, p. 9.

5 Tasmanian Government, *Submission 35*, p. 10.

6 Tasmanian Government, *Submission 35*, p. 10.

7 Tasmanian Government, *Submission 35*, pp 26–27; Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 2.

video survey must be conducted every 12 months or in accordance with the stocking and fallowing regime of the farm.[8]

3.10 The Tasmanian Government stated that monitoring reports and underwater video footage must be reported by the lease holder pursuant to licence conditions. These are assessed by the DPIPWE against specific criteria aligned with relevant management objects and are then reported to stakeholders.

3.11 The regulator can direct the lease holder to undertake a range of management responses to mitigate any significant benthic impact attributable to marine farming operations. Where monitoring identifies effects that are unknown, or difficult to clearly attribute, research may be undertaken as part of the management framework.[9]

Water quality management framework

3.12 Water quality monitoring is undertaken to assess and manage the effects of stressors including nutrient loading and dissolved oxygen depletion associated with fish metabolic processes, respiration and biogeochemical processes within organically enriched sediment.

3.13 Results of monitoring are reported to DPIPWE, along with relevant information on feed inputs and biomass, for assessment. Where unexpected, or difficult to clearly attribute effects are identified, a range of management responses can be initiated. These include controls on nitrogen emissions, more focused monitoring or the undertaking of research. The Tasmanian Government stated that outcomes of monitoring, compliance reporting and research can then be used to inform the refinement of the program.[10]

Ongoing water quality monitoring in the southeast and Macquarie Harbour

3.14 In the Huon Estuary and D'Entrecasteaux Channel, the Broadscale Environmental Monitoring Program (BEMP) commenced in 2009 specifically to monitor the health of the wider marine environment. The intention of the BEMP was to provide:

> …a monitoring program with the capacity to detect the effects of those processes judged to be most threatening to the Huon and D'Entrecasteaux ecosystem at the whole-of-ecosystem level…to provide knowledge of how well the ecosystem is functioning with an increased nutrient load and to allow any significant temporal trend(s) in ecological indicators to be detected.[11]

---

8 WWF-Australia, *Submission 13*, p. 7; see also Tasmanian Salmonid Growers Association, *Submission 33*, pp 14–15.

9 Tasmanian Government, *Submission 35*, p. 11.

10 Tasmanian Government, *Submission 35*, p. 12.

11 Institute for Marine and Antarctic Studies, *Submission 20*, p. 7.

3.15 The BEMP has both a water quality component and a sediment component which monitors sediment chemistry and invertebrate communities. Samples to test water quality are taken regularly throughout the year at multiple sites which are located outside of marine farm leases and are distributed across different areas of the Channel and lower Huon Estuary. Indicators of water quality assessed include water column nutrients, dissolved oxygen levels and salinity. Sampling for sediment condition is undertaken regularly and includes visual assessment. Assessment of phytoplankton is also undertaken.[12]

3.16 In Macquarie Harbour, the Macquarie Harbour Environmental Monitoring Plan (MHEMP) has been used since 2011 to monitor water quality. Indicators of water quality are sampled monthly and include water column nutrients, dissolved oxygen levels and salinity. The industry also undertakes additional voluntary monitoring of some water quality indicators at various sites in the harbour. Assessment of phytoplankton is also undertaken.[13]

Issues raised in relation to waterway health monitoring

3.17 The Tasmanian Government's adaptive management approach for the aquaculture industry is underpinned by an ongoing environmental monitoring program. The program is designed to inform government and industry on environmental performance and to support modification of farming practices if required. As such, submitters noted that the adequacy of the monitoring program was significant with EDO Tasmania stating:

> …adaptive management will not be effective without appropriate monitoring and enforcement activities to facilitate adaptation.[14]

3.18 The committee received evidence supporting the regulatory and monitoring framework currently in place in Tasmania. For example, while commenting on some specific concerns about the monitoring program, WWF-Australia stated that, in relation to water quality monitoring:

> WWF-Australia believes the current frameworks in place to legislate, regulate, manage and monitor finfish aquaculture operations in the State of Tasmania provides a strong foundation.
>
> Before any farming licence or approvals are awarded by the Tasmanian government to any aquaculture company or for any practices in any region, detailed baseline surveys and more recently, Environmental Impact Assessments are carried out.[15]

12 Tasmanian Government, *Submission 35*, Appendix 1, p. 27; see also Institute for Marine and Antarctic Studies, *Your Marine Values: Public Report 2013*, p. 83.

13 Tasmanian Government, *Submission 35*, Appendix 1, p. 27.

14 EDO Tasmania, *Submission 70*, p. 12.

15 WWF-Australia, *Submission 13*, p. 4.

3.19 WWF-Australia went on to state that 'the current government requirements for monitoring and reporting of benthic impacts are consistent with best practice standards'.[16]

3.20 However, a range of issues were raised in evidence in relation to the adequacy of the monitoring program, access to data and the independence of the program.

Adequacy of monitoring

3.21 A number of submitters, including Environment Tasmania, argued that the adequacy of monitoring of waterway health was poor.[17] They pointed to a range of specific matters including the lack of baseline data in the south east, the frequency of monitoring and reporting of some indicators and the lack of monitoring of some indicators.

3.22 It was argued by some submitters that there was a lack of baseline data in the south east in relation to the BEMP, which undermined confidence in the capacity of the monitoring program to identify the extent and impact of changes arising from marine farming activities.[18] Environment Tasmania noted that monitoring data collected between 2009 and 2012 'has been used to state there has been no broadscale impacts from fish farms, however, the baseline figures used for comparison are from after fish farming had already been occurring for over 15 years'.[19]

3.23 The Australian Marine Conservation Society added that although the BEMP was:

> …a good step forward in taking a holistic approach…to ensuring the cumulative impacts of aquaculture are accounted for, concerns remain about the extent of data that is collected as well as lack of adequate baseline information upon which to base an adaptive management regime.[20]

3.24 The Australian Marine Conservation Society went on to state:

> There is limited information prior to the BEMP that provides stakeholders with confidence that aquaculture impacts have not caused significant environmental effects at levels that could have consequences for marine flora and fauna and overall ecosystem health. As it is, the data recorded since 2009 should not be used as proof of no widespread impacts from aquaculture, but could be used as a reference point for future monitoring.[21]

---

16 WWF-Australia, *Submission 13*, p. 7.

17 Environment Tasmania, *Submission 93*, pp 4–5.

18 Environment Tasmania, *Submission 93*, p. 5.

19 Environment Tasmania, *Submission 93*, p. 4; see also Australian Marine Conservation Society, *Submission 9*, p. 2; EDO Tasmania, *Submission 70*, p. 12.

20 Australian Marine Conservation Society, *Submission 9*, p. 2.

21 Australian Marine Conservation Society, *Submission 9*, p. 2.

3.25 While a reference site could be used in the absence of good baseline data, the Australian Marine Conservation Society stated that there were no biologically similar sites to the Huon Estuary and D'Entrecasteaux Channel that could be used for this purpose. It therefore concluded that 'overall, there are limited opportunities for identification of significant ecosystem wide impacts that would require mitigation from the industry, and action from government'.[22]

3.26 In relation to Macquarie Harbour, similar concerns were expressed about the lack of baseline data before the recent expansion of aquaculture operations was approved.[23] The Australian Marine Conservation Society commented that for Macquarie Harbour 'there is little information on basics such as bottom-water residence times, and limited information publicly as to how this lack of knowledge has been accounted for in precautionary management decisions'.[24]

3.27 The Australian Marine Conservation Society stated that marine farms are situated in dynamic environments and farming activities produce a 'seemingly high degree of unknown impacts regarding impact of the industry on marine ecosystems'. Accordingly, an adaptive management approach 'would seem to be an essential component of ensuring impacts can be mitigated'. However, the Society argued that 'the lack of baseline data on which to base an adaptive management regime means managers are unclear on what level of ecosystem health they should be managing to'. This means that an 'extremely precautionary approach should be taken'. The Society concluded that this appears not to have been the outcome with leases being approved with limited datasets on which to base decisions.[25]

3.28 Another matter raised was the frequency of monitoring of some parameters. WWF-Australia, for example, commented that, for the most part, the water quality monitoring program is consistent with the current standards of the Aquaculture Stewardship Council (ASC). However, the required frequency of sampling for some components does not meet best practice with fin-fish farms under the Tasmanian regulatory regime being required to sample fortnightly 'at best, compared to the requirement for at least weekly sampling under ASC'. WWF-Australia, however, acknowledged that some operators routinely sample on a daily basis.[26]

3.29 The requirement of video monitoring for sediment health only every 12 months was also questioned. Submitters noted the results of a study undertaken on behalf of Environment Tasmania by consultant Hugh Kirkman in 2014.[27] The study commented that the current frequency of video samples 'seems inadequate for a

22 Australian Marine Conservation Society, *Submission 9*, p. 2.

23 See Environment Tasmania, *Submission 93*, p. 5.

24 Australian Marine Conservation Society, *Submission 9*, p. 3.

25 Australian Marine Conservation Society, *Submission 9*, p. 2.

26 WWF-Australia, *Submission 13*, p. 5.

27 EDO Tasmania, *Submission 70*, p. 12; Environment Tasmania, *Submission 93*, p. 5.

meaningful assessment of impacts' and recommended that surveillance be conducted more regularly. The study concluded that 'annual monitoring will not alert managers to impacts that may do permanent damage to the benthos'.[28]

3.30 The availability of timely information was also raised by Environment Tasmania in relation to data collection in Macquarie Harbour. Environment Tasmania commented that monthly reporting 'limits both the reliability of the data and the timely usefulness of the data by the regulator'.[29] In addition to concerns about the frequency of monitoring activities, the frequency of collation of data was also raised by EDO Tasmania which noted that BEMP data is collated only every three years.[30]

3.31 The monitoring regime requires the sampling of a range of indicators, however, WWF-Australia noted the lack of turbidity monitoring. WWF-Australia stated that turbidity is a minimum standard under the ASC. While acknowledging that turbidity measurement is part of Tassal's monitoring program, WWF-Australia argued that turbidity measurement should be part of licence conditions for all operators.[31]

3.32 EDO Tasmania pointed to the limited monitoring in the D'Entrecasteaux Channel for determining whether the cumulative contribution of each lease area to the nitrogen load exceeds the cap set in the MFDP. In addition, EDO Tasmania argued that there is no ongoing assessment to determine whether the existing nitrogen cap is set at a sustainable level particularly as land-based nutrient sources contribute to the nitrogen load in the Channel.[32]

3.33 In Macquarie Harbour, the lack of an integrated approach to monitoring was criticised by the Australian Marine Conservation Society which stated that, while monitoring requirements are in place as conditions on a Marine Farming License, 'this would appear to be specific to an individual company's licence'. The Society argued that this does not establish an integrated approach to be taken by all operators.[33]

3.34 A final concern relating to the adequacy of data was the lack of monitoring of impacts beyond 35 metres outside of a lease area. The Australian Marine Conservation Society commented:

> Industry operators are only required to monitor the impacts of fin-fish farming to 35m outside of a lease area. Due to the nature of water movement, effluent from fish farms has a footprint that extends over an arbitrary 35m boundary that escapes any form of monitoring or required

28 Hugh Kirkman, *Review of Monitoring the Environmental Effects of Salmon Farming in Tasmania*, September 2014.

29 Environment Tasmania, *Submission 93*, p. 5.

30 EDO Tasmania, *Submission 70*, p. 12.

31 WWF-Australia, *Submission 13*, pp 5–6.

32 EDO Tasmania, *Submission 70*, p. 12.

33 Australian Marine Conservation Society, *Submission 9*, p. 3.

> mitigation action. 35m would appear to be based more on operational efficiency for leaseholders than having relevance for the marine environment and represents a serious lack of monitoring for the wider marine environment.[34]

3.35 This matter is addressed further in chapter 4.

Response to issues raised in evidence

3.36 The Tasmanian Government responded to general concerns about the adequacy of the monitoring system and commented that the management framework for the salmonid industry provides the means to effectively regulate and manage the industry in accordance with best practice management principles.[35]

3.37 Dr John Whittington, Secretary, DPIPWE, added that the management controls on companies have 'the force of law' and as part of the controls, monitoring it required of a range of environmental and fish health parameters. Reports are provided to DPIPWE with auditing being conducted to ensure the quality of monitoring activities. Dr Whittington concluded that 'our system of requiring reporting of environmental parameters to us is, we believe, a sound one, an efficient one and one that is, I believe, rigorous'.[36]

3.38 The Tasmanian Salmonid Growers Association (TSGA) similarly pointed to the robustness of the monitoring regime undertaken by the industry including the additional monitoring voluntarily undertaken by companies. Dr Adam Main, TSGA, commented that the data collected is transparent and 'goes well beyond meeting basic compliance needs' and that datasets are 'robust, publicly available, often independently sourced, longitudinal, peer reviewed and audited'. Dr Main added that the industry's work in this area has been internationally recognised.[37]

3.39 The TSGA went on to comment that

> With the BEMP and MHEMP, a range of quality assurance and quality control measures are prescribed by the DPIPWE to ensure that sampling activities produce environmental data that can be interpreted with a high degree of confidence, and that appropriate methodologies, procedures and processes are carried out at all of the critical control points – from sampling in the field, to laboratory analysis and finally to data interpretation.[38]

---

34 Australian Marine Conservation Society, *Submission 9*, pp 2–3; see also Mr Dean Lisson, Chief Executive, Tasmanian Abalone Council, *Committee Hansard*, 16 July 2015, p. 18.

35 Tasmanian Government, *Submission 35*, p. 19.

36 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 2.

37 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 27.

38 Tasmanian Salmonid Growers Association, *Submission 33*, p. 8.

3.40 The TSGA concluded that, currently, there is adequate and available data on waterway health in terms of quality and quantity to provide sufficient confidence for:

- industry participants to make appropriate management decisions;
- regulators to be able to monitor industry and apply regulation;
- the scientific community to research, analyse and report on data;
- other parties such as certification bodies; and
- interested parties in the community, including consumers.[39]

3.41 In coming to this view, the TSGA stated that the Tasmanian salmonid industry relies on credible, scientifically sound and reliable data about its impact on Tasmanian waterways to make management decisions. The TSGA also stated that the industry is committed to continuously improving its data collection and management and contributing to public knowledge of Tasmania's waterways. In this regard, the TSGA added that the industry has commenced the development of:

- an industry data management strategy to streamline data collection and ensure the standardisation of data collection and therefore ease of comparability; and
- an industry information strategy to guide the way data is collected and analysed to ensure it is responsive to the needs of management, researchers and the broader community.[40]

3.42 Extensive information on the contribution of scientific research to the development of the monitoring framework was provided in the submission from the IMAS. Much of this research has been undertaken in conjunction with the Tasmanian Government and industry. The IMAS commented that the first study, in 2002, was specifically aimed at supporting the development of an industry-wide monitoring program by determining the most reliable and cost effective monitoring approaches for the management of the Tasmanian industry. The findings of the study played a key role in the development of the current marine farming monitoring program regulated by DPIPWE.[41]

3.43 The IMAS added that clearly a large body of research has been undertaken with the specific purpose of establishing the effects of fin-fish farming on the marine environment. It noted that, while this research has often been specifically targeted at providing management advice and recommendations for either the industry directly or regulators, the underlying data also provides a substantial resource for understanding broader ecosystem processes and function.[42]

---

39 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 5.

40 Tasmanian Salmonid Growers Association, *Submission 33*, p. 13.

41 Institute for Marine and Antarctic Studies, *Submission 20*, p. 4.

42 Institute for Marine and Antarctic Studies, *Submission 20*, p. 13.

3.44 The IMAS concluded:

> …it is worth noting that the research understanding outlined in this document represents two decades of accumulated knowledge and that this has been developed through a broad range of research collaborations both with other research providers (notably CSIRO) and in collaboration with industry, government, various not for profit organisations, funding agencies (particularly FRDC, Natural HeritageTrust/National Resource Management, various CRCs), and the community. The research has been progressive, with each question answered leading quite naturally to further questions. The transition in our understanding of the interaction of marine farming (and therefore monitoring requirements) has similarly progressed from a need to understand local-scale impacts, to a need to define broader-scale impacts, to the situation where ecosystem interactions and multiple-use management are now the focus. It is to be expected that as the current research evolves other questions will need to be addressed.[43]

3.45 The TSGA also responded to the specific issues raised in evidence. In relation to comments on the availability of baseline data, the TSGA agreed that there is no broadscale baseline dataset available for existing salmon farming regions, that pre-dates farming or other human influence. However, it went on to comment that this is the case in other salmon farming regions internationally.

3.46 The TSGA noted that it is a requirement of the Tasmania Government's regulatory regime that a baseline environmental survey must be undertaken prior to the commencement of marine farming operations. Where farming operations commence in new regions, such as Storm Bay, pre-farm baseline data will be available. The TSGA added that the licensing of a lease area for fin-fish farming is contingent on assessment and approval of the baseline environmental survey report by DPIPWE.[44] The Tasmanian Government provided the list of parameters included in baseline assessments. The parameters include biological analysis, benthic infauna samples, sediment samples and targeted threatened species surveys if not covered during the zone assessment.[45]

3.47 In relation to frequency of monitoring, the TSGA stated that monthly broadscale monitoring is only undertaken in Tasmania and nowhere else internationally. In addition, companies complete voluntary surveys within the compliance period as required. In relation to video surveys, the TSGA commented that they are 'a cornerstone of our sampling and monitoring framework' and are easily comparable to everywhere in the world.[46]

---

43 Institute for Marine and Antarctic Studies, *Submission 20*, p. 15.

44 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 8; see also Tasmanian Government, *Submission 35*, pp 8–10.

45 Tasmanian Government, *Submission 35*, Appendix 1, p. 24.

46 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 8.

3.48 The TSGA concluded that the intent of the BEMP is to monitor water and sediment quality in the system, as these measures are deemed to be the most relevant monitoring indicators for assessment of the broader ecosystem. This is consistent with the outcomes of the Aquafin CRC[47] research 'which clearly identified that water and sediment quality were the most relevant and useful indicators for such an assessment'.[48]

3.49 In relation to parameters, the TSGA noted that an extensive body of research supports the basis for the selection of parameters that are currently monitored in Tasmanian aquaculture areas.[49]

3.50 Evidence on the 35 metre zone was provided by both the TSGA and WWF-Australian. WWF-Australia submitted that the 35 metre zone was based on 'strong evidence from both international and local research'. It went on to comment that since being introduced 15 years ago, monitoring by research bodies and farms (as a part of the licence conditions) has provided the government with evidence that a 35 metre zone is a suitable distance for the farming environment.[50]

3.51 The TSGA noted that farming licence conditions provide that there must be no significant visual, chemical or biological impacts extending 35 metres from the boundary of the lease area. The industry also uses fallowing (resting the seabed by moving pens to different locations within the lease area) to ensure that the seabed is effectively managed.[51]

3.52 The TSGA concluded that:

> The adaptive management framework employed by both industry and regulator alike allows for both results of the process studies and the monitoring itself to be continually assessed and the need for new data/information identified, with its collection then incorporated into the programme itself.[52]

3.53 In addition, the committee notes that the Fisheries Research and Development Corporation has funded 19 research projects related to the adequacy and availability of data on Tasmanian waterway health.[53]

---

47 The Aquafin CRC was established as a partnership between industry, government, IMAS and CSIRO.

48 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 9.

49 Tasmanian Salmonid Growers Association, *Submission 33*, p. 7.

50 WWF-Australia, *Submission 13*, p. 6.

51 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 22.

52 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 9.

53 Fisheries Research and Development Corporation, *Submission 8*, p. 2.

Access to information

3.54 It was argued by some submitters that there is inadequate public access to data and information about the fin-fish industry. While EDO Tasmania noted that information related to applications for amendments to marine farming development plans must be published, access to other information regarding ongoing regulation of marine farming operations is extremely difficult.[54] Requests for information held by government can be made under a Right to Information request, but it was observed that this is generally a slow process and often results in a refusal on the basis of commercial-in-confidence exemptions, the volume of material that would need to be supplied or that it may impair the Government's ability to obtain information in the future.[55]

3.55 Ms Rebecca Hubbard, Environment Tasmania, gave the example of attempts to access data in relation to Huon Aquaculture's hatchery on the Russell River. Ms Hubbard commented that Environment Tasmania had engaged with the EPA over the issue of algal blooms in the river and had requested a specific core environmental baseline report. This information had not been provided. Following an internal review processes, the matter is under review by the Tasmanian Ombudsman. Ms Hubbard commented 'but that has been in process for over three months, and there are still 20 appeals in front of us'.[56]

3.56 While acknowledging that some of monitoring data may be considered commercial-in-confidence information, nonetheless submitters argued that there is a range of other data which should not be treated as such. WWF-Australia pointed to natural environment parameters and drew a parallel with wild capture fishery data and information which is made publicly available.[57] Dr Imogen Fullagar also commented on the level of data available from TasWater, while EDO Tasmania pointed to Canada where all information regarding environmental assessments undertaken must be made publicly available.[58]

3.57 WWF-Australia also commented that there appeared to be a significant variation in the amount and type of information made publicly available by the three companies with Tassal providing more information, for example, through its Sustainability Reports.[59]

---

54 EDO Tasmania, *Submission 70*, p. 10.

55 EDO Tasmania, *Submission 70*, p. 10; Environment Tasmania, *Submission 93*, p. 4; see also Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 17.

56 Ms Rebecca Hubbard, Marine Coordinator, Environment Tasmania, *Committee Hansard*, 16 July 2015, p. 3.

57 WWF-Australia, *Submission 13*, p. 3.

58 Dr Imogen Fullagar, *Submission 38*, p. 2; EDO Tasmania, *Submission 70*, p. 10.

59 WWF-Australia, *Submission 13*, pp 3–4.

3.58 It was argued that the lack of publicly available monitoring data may undermine trust and confidence in the industry. For example, Ms Hubbard, Environment Tasmania, commented:

> …it is difficult to ascertain just how accurate the department claims and the industry claims regarding sustainability and lack of fish-farming impacts, because water-quality data, as well as scientific and production reports, are not released publicly and therefore cannot be verified. This is a really significant point.[60]

3.59 Ms Hubbard went on to comment that there was available expertise within environmental organisations to interpret raw data and that stakeholders can also access independent scientists to verify assessments.[61] Ms Jessica Feehely, EDO Tasmania, added:

> I absolutely acknowledge that industry is doing a lot of monitoring. The difficulty is actually accessing that information to work out how much monitoring is being done, where it is being done and where it is not being done. So absolutely if there is transparent access to that information it may be identified that there is no need for additional monitoring. But until there is public access to all of the information that has been gathered through that process it is difficult to identify where the monitoring gaps are.[62]

3.60 WWF-Australia added that transparency, availability and openness of data and information are 'paramount for any business or government striving to achieve and meet best practice governance and business frameworks for operations'.[63] WWF-Australia noted that the ASC has standards concerning availability of data; WWF-Australia argued that the Tasmanian Government should 'look to the salmon standard of the ASC, to learn from and make required changes regarding accessible data and information'.[64]

3.61 WWF-Australia also suggested that the Tasmanian Government could assist in providing greater amounts of publicly available information by releasing its own annual aquaculture report for each farming region/zone. This report could include critical data and information regarding the industry operations as well as physio-chemical, biological and visual parameters essential for healthy, responsible aquaculture production and sustainable utilisation of the marine environment.[65]

---

60 Ms Rebecca Hubbard, Marine Coordinator, Environment Tasmania, *Committee Hansard*, 16 July 2015, p. 3.

61 Ms Rebecca Hubbard, Marine Coordinator, Environment Tasmania, *Committee Hansard*, 16 July 2015, p. 3.

62 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 16 July 2015, p. 58.

63 WWF-Australia, *Submission 13*, p. 3.

64 WWF-Australia, *Submission 13*, p. 4.

65 WWF-Australia, *Submission 13*, p. 4.

Response to issues raised in evidence

3.62 Both the Tasmanian Government and industry stakeholders responded to concerns about the level of publicly available information. Dr Whittington, DPIPWE, pointed to the numerous peer reviewed papers and reports available on the Tasmanian salmonid industry. He went on to note that the companies themselves provide extensive amounts of public information:

> They have websites that have, for example, sustainability dashboards. They produce sustainability reports. So there is considerable information available on the industry.[66]

3.63 DPIPWE provides information on its own website, for example, a review by IMAS of monitoring data collected between 2009 and 2012. This review was commissioned by DPIPWE and represents a comprehensive summary of both the water and sediment quality data collected as part of the BEMP.[67] Dr Whittington also stated that DPIPWE would like to further investigate the provision of online reporting of some of the environmental data that it receives and this will be considered over the coming year.[68]

3.64 The TSGA stated that the industry recognised the public interest in fin-fish farming's environmental performance and how the industry's activities relate to waterway health. The TSGA pointed to the range of information on waterway health and other aspects of environmental performance made publicly available by the regulator, the industry, the scientific community and certification bodies.[69] In addition, it noted that each company employs community engagement officers who are able to facilitate access to data and information where readily available and appropriate.[70]

3.65 Similarly, the Tasmanian Seafood Industry Council commented that the extensive amount of waterway health data collected by the salmon industry is shared with, and used by, a diverse array of stakeholder groups and organisations, including the industry, regulatory bodies and third-party certification organisations. In addition, waterway health data and information is publicly available online.

---

66 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 7.

67 J Ross & C Macleod, *Evaluation of Broadscale Environmental Monitoring Program (BEMP) data from 2009–2012*, IMAS, 2013 http://dpipwe.tas.gov.au/Documents/Ross---Macleod-BEMP-Data-Review-2009-2012-.pdf (accessed 5 August 2015).

68 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 8.

69 See for example, Huon Aquaculture *Sustainability Dashboard* which provides monthly average dissolved oxygen readings for Hideaway Bay and Macquarie Harbour, http://dashboard.huonaqua.com.au/

70 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 6.

Mr Julian Harrington, Tasmanian Seafood Industry Council, concluded that 'this open and transparent sharing and access to data ensures data quality and quality control'.[71]

3.66 Other witnesses also responded to calls for the release of raw data from monitoring activities. Marine Solutions Tasmania pointed to the risks of the use of raw data and commented that it:

> …understands one of the risks to the industry and to the environment is that raw data collected from a variety of sources is interpreted selectively, in isolation, or to address issues which it was not designed to address. With this in mind, [Marine Solutions Tasmania] believes strongly that raw data should be interpreted and presented by those who have an understanding of why the data was collected, how the data was collected, the limitations of the data, and provide an explanation of the interpretation.[72]

3.67 Mr Sean Riley, Aquenal Pty Ltd, also stated that the raw data needs to be evaluated in terms of the context and interpreted in a meaningful way.[73]

3.68 Similarly, Dr Catriona Macleod, IMAS, commented that the main issue with making raw data publicly available is quality control, interpretation and contextualisation of the data. Dr Macleod added:

> I work with a number of monitoring issues and areas…In a lot of cases it is not so much the need for the raw data, I think, that people have concerns about; it is that they truly understand how the interpretation is being derived. A lot of people talk about real term data and the transparency with that. Having had a lot of experience with data, that can generally mean an awful lot of numbers to wade through. I, personally, unless it is a project I am working on, would rather have that data in association with the interpretation, so I can actually contextualise it—
>
> …and review it to see if that interpretation is correct, rather than the raw data per se. So, in principle, no. But I think the problems that you have with something like that is the fact that if you do not understand aspects of how the data was collected, or what the data is being interpreted into then you can get misinterpretations.[74]

3.69 However, Dr Macleod commented that IMAS considered it was very important that its research is understood by all stakeholders involved and that it is relevant to the issues that it has been asked to address. Dr Macleod went on to note that IMAS had undertaken the *Our Marine Values* project which had been important in understanding 'where the research findings and outputs, particularly as they relate to

---

71 Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard*, 15 July 2015, p. 47.

72 Marine Solutions Tasmania, *Submission 16*, p. 5.

73 Mr Sean Riley, General Manager, Aquenal Pty Ltd, *Committee Hansard*, 16 July 2015, p. 22.

74 Dr Catriona Macleod, Head, Fisheries and Aquaculture Centre, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 41.

environmental monitoring, relate back to the concerns—whether they be industry concerns, government concerns or community concerns'. The report, published in early 2014, highlighted the concerns and issues which will underpin research proposed into issues in a multi-stakeholder environment.[75]

Independence of monitoring activities, analysis and research

3.70 The Tasmanian Government submission sets out information on who collects data for each stage of the regulatory process. For example, data from ongoing benthic monitoring is collected by contractors employed directly by the companies and/or by the companies themselves. Water quality monitoring data is collected by consultants on behalf of companies. This data is provided to DPIPWE for environmental assessment and management.[76] Analysis and research is undertaken by consultants and by research bodies including CSIRO and IMAS.

3.71 The committee received evidence which called into question the independence of the monitoring activities, analysis of data and research undertaken. EDO Tasmania, for example, submitted that there is currently limited independent monitoring of marine farming operations and noted that DPIPWE relies largely on reports and video surveillance submitted by the operators themselves.[77] The Australian Marine Conservation Society added:

> While data on chemical and biological parameters is clearly being collected by operators, there is no opportunity for independent analysis of the extent of change in critical parameters such as [dissolved oxygen], and no transparency in holding operators to account for condition breaches. It remains unclear what action was taken regarding condition breaches, which leaves little public trust in the way the Harbour is being managed.[78]

3.72 Ms Hubbard, Environment Tasmania, commented on funding of scientific assessment and research and stated:

> …what makes it difficult for the scientists here is they do receive a lot of funding from the industry and for the management of the industry. It makes it difficult for them to be critical. That is a very honest statement, and they would say the same thing…These are critical environments for other commercial species and protected species. It is really about being able to give those scientists the space to be able to make fair, objective,

75 Dr Catriona Macleod, Head, Fisheries and Aquaculture Centre, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 40.

76 Tasmanian Government, *Submission 35*, pp 24–27.

77 EDO Tasmania, *Submission 70*, p. 12; see also Tasmanian Conservation Trust, *Submission 92*, p. 10; Environment Tasmania, *Submission 93*, p. 4; Ms Christine Materia, President, Tasmanian Aquaculture Reform Alliance, *Committee Hansard*, 16 July 2015, p. 4.

78 Australian Marine Conservation Society, *Submission 9*, p. 3.

> independent and critical assessment and recommendations without fear of reprisal.[79]

3.73 EDO Tasmania also commented on concerns about the reliance of industry funding for research and stated:

> These research organisations continue to provide excellent research outcomes and direction on improved sustainability. However, the need for industry funding to sustain these research programmes risks a level of capture in terms of the research agenda, outcomes of such research and availability of research data.[80]

Response to issues raised in evidence

3.74 The committee received responses from the Tasmanian Government, industry, consultants and scientists in relation to concerns about independence of monitoring, assessment, analysis and research activities.

3.75 Dr Whittington, DPIPWE, noted that the companies use a range of consultants with accredited laboratories to undertake collection and analysis of that work. Dr Whittington also noted that DPIPWE has auditing processes in place.[81]

3.76 In relation to monitoring activities, the TSGA commented that a third party undertakes collection of data and, although hired by industry, is independent of the industry. The TSGA went on to state that:

> A third party contractor acts autonomously but is given a very strict set of procedures to follow (often set out in regulation or license conditions). The third party has no power to adapt, change or delete any part of the methodology. The second party equally has no ability to adapt, change or delete any part of the methodology.[82]

3.77 The data collected by contractors complements other evidence gathered by the Tasmanian Government. However, the TSGA noted that 'it is still the role of the government to make the judgement about whether procedures have been followed and compliance has been achieved'. The TSGA concluded:

> Involving another party in the collection of evidence allows the Tasmanian Government (first party) and the industry (second party) to gather authentic and valid evidence under specific circumstances in a cost-effective way.[83]

---

79 Ms Rebecca Hubbard, Marine Coordinator, Environment Tasmania, *Committee Hansard*, 16 July 2015, p. 9.

80 EDO Tasmania, *Submission 70*, p. 7.

81 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 2.

82 Tasmanian Salmonid Growers Association, *Response to submissions*, pp 5–6; see also Dr Adam Main, Chief Executive Officer, *Committee Hansard*, 15 July 2015, p. 36.

83 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 6.

3.78 The companies undertaking monitoring and assessment activities were similarly of the view that there is independence in monitoring and research and went on to note that they did not only work for fish farming companies but for a range of stakeholders. Stakeholders include environmental organisations with Mr Sean Riley, General Manager, Aquenal Pty Ltd, stating that the company had added further resources to ensure that a project commissioned by Environment Tasmania was completed to a high standard.[84]

3.79 Mr Sam Ibbott, Director, Marine Solutions, commented that:

> The broad range of clients who we work with includes ENGOs and aquaculture, and also GBEs and the government. To say that there would be a lack of independence I think would not be fair across the broad range of those clients. We are certainly not putting a slant on anything. Also important is the way that we collaborate with IMAS and with CSIRO for project development…we have open and frank discussions to make sure that the science that we are providing is robust, peer reviewed and developed in a manner that has the correct stakeholder input to make sure that it is actually targeted...[85]

3.80 Dr Neil Harstein, Project Manager, Aquadynamic Solutions, noted that information collected by the company in Macquarie Harbour aligned with that collected by the EPA and argued that this pointed to the independence of the data collection:

> …the information that we have been collecting has been backed up, if we can put it like that, by EPA as well. So the types of data that we have been collecting have been matching the EPA dataset very well. I think that is a good show-and-tell, in terms of having regard to an independent dataset collection, that we are conducting.[86]

3.81 Dr Macleod also commented on the independence of environmental monitoring of the fin-fish industry and noted that the protocols for that monitoring are fairly well specified. She went on to comment:

> I do not think it really matters who does the monitoring, whether it is paid for by government, by industry, by wherever. It is more important that the monitoring that is getting done is right and that the specifications are clear, so that you can have confidence that what is getting done is what you think is getting done and it is getting done where you think it is getting done.[87]

---

84 Mr Sean Riley, General Manager, Aquenal Pty Ltd, *Committee Hansard*, 16 July 2015, p. 21.

85 Mr Sam Ibbott, Director, Marine Solutions, *Committee Hansard*, 16 July 2015, p. 21.

86 Dr Neil Harstein, Project Manager, Aquadynamic Solutions, *Committee Hansard*, 16 July 2015, p. 21.

87 Dr Catriona Macleod, Head, Fisheries and Aquaculture Centre, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 41.

3.82 On the more general issue of scientific independence, the IMAS submitted that:

> The Australian Code for the Responsible Conduct of Research (the Code) is a statement of principles aimed to guide institutions and researchers in responsible research practices and the promotion of research integrity. Knowledge of the principles outlined in the Code is essential for both the conduct and support of research by researchers. From a compliance perspective, the University of Tasmania endorses and adopts the principles and practices of responsible research outlined in Part A of the Code.[88]

3.83 The TSGA concluded by stating:

> The industry absolutely rejects the comment that it intimidates scientists. The industry respects their right to interpret science based on their experience and recognises that on occasion there is vigorous debate amongst scientists as to interpretation.
>
> IMAS and CSIRO scientists represent organisations that have international reputations for the quality of their work, they participate in international collaborations in fields of expertise and a significant number of participants over the 30 years of applied research around the industry in a number of clearly different sectors.[89]

Committee comment

3.84 The committee considers that the Tasmanian Government has instituted a comprehensive and robust monitoring regime on which to base its management of the fin-fish aquaculture industry. The committee believes the regime currently used in Tasmania is comparable to world's best practice.

3.85 The committee agrees that adaptive management, particularly in the dynamic environment where fin-fish farming activities occur, must be based on sound data collection and analytical regimes and facilitate the effective incorporation of identified improvements into management practices. In this regard, the committee notes that monitoring of fin-fish farming operations has long been required in Tasmania and extensive datasets are now available.

3.86 These datasets are used by the Tasmanian Government to inform the on-going adaptive management of the industry to safeguard the marine environment. Research undertaken by various bodies over the last two decades, notably the Institute for Marine and Antarctic Studies, has contributed to the development of the fin-fish industry regulatory regime as well the understanding of the environmental effects of fin-fish operations. As the industry has grown, this research has assisted to refine the monitoring so that emerging issues are addressed and the monitoring regime meets the needs of increasing production in the industry

88 Institute for Marine and Antarctic Studies, *Answer to question on notice*, No. 2.

89 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 28.

3.87 While there were concerns about possible compromise of the monitoring regime because the industry participants collect the data (or pay for its collection) and research organisations rely on funding from industry, the committee strongly considers that this is not the case. The committee received extensive evidence that underscores the independence of those undertaking monitoring activities and research. In addition, the Tasmanian Government prescribes how monitoring is to be conducted and has in place an audit program to ensure the robustness and accuracy of monitoring information. The committee also notes the evidence that outcomes of monitoring programs conducted by consultants align with those of the Environment Protection Authority.

3.88 In relation to the specific issues raised in evidence, the committee notes in particular the calls for more frequent monitoring of some parameters. The committee acknowledges that some companies conduct monitoring more frequently than at the intervals prescribed by the government. In some instances, more frequent monitoring is a requirement of a certification program, for example the Aquaculture Stewardship Council. The committee considers that this shows the commitment of the industry to ensure that a robust monitoring system of their operations is in place. The committee therefore encourages both industry and the government to provide more extensive information on where monitoring by industry exceeds the prescribed requirements.

3.89 Some submitters called for greater access to information, including raw data from monitoring activities. The committee notes evidence about the possible risks of misinterpretation and lack of context should raw data be made publicly available and, therefore, does not support access to raw data.

3.90 Currently, there is an extensive range of information available publicly from multiple sources including government, companies and research bodies related to many aspects of the salmonid industry. Nonetheless, the committee considers that the Tasmanian Government should consider providing more information about the outcomes of the monitoring regime including audit activities and compliance. In particular, the committee notes the suggestion from WWF-Australia that the government should publish an annual aquaculture report for each farming region/zone. The committee also notes the comments from Dr Whittington indicating that consideration will be given over the next year to providing online reporting of some environmental data.[90]

3.91 The committee believes that greater access to information would improve transparency of the regulatory regime, ensure that interested stakeholders can come to an informed position on areas of concern and allay fears that the community is not being adequately informed about the impacts on the marine environment of Tasmania.

90 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 8.

Recommendation 1

3.92 The committee recommends that the Tasmanian Government support the greater provision of environmental information and data relating to the fin-fish industry by the Department of Primary Industries, Parks, Water and Environment.

3.93 Finally, the committee was gravely concerned about inferences of lack of independence of, or constraints to, research and monitoring related to the fin-fish aquaculture industry including inland river hatcheries. The committee believes that the scientists and consultants who undertake research and monitoring of aquaculture work to the highest ethical standards. Research by scientists at the IMAS, and other organisations, is peer reviewed and acknowledged to be world class. In addition, scientists and consultants work with a range of stakeholders including environmental organisations. The committee, therefore, considers the comments regarding lack of independence to be without foundation.

3.94 In particular, the committee notes concerns about possible conflict of interest and lack of independence of scientific research in relation to the report on the impacts of salmonid farming on abalone undertaken by Professor Colin Buxton.[91] The committee received a response from Professor Buxton to this evidence.[92] The response addressed these concerns and the committee is satisfied that Professor Buxton's appointment did not present issues regarding a conflict of interest or a lack of independence.

91 Mr Dean Lisson, Chief Executive, Tasmanian Abalone Council, *Committee Hansard*, 16 July 2015, p. 12.

92 Professor Colin Buxton, *Response to evidence from public hearing, 16 July 2015.*

Chapter 4

Impact of fin-fish aquaculture on waterway health

4.1 Fin-fish farming has the potential to effect waterway health through the deterioration of water quality and benthic habitats, introduction of pest species and damage to threatened species. Impacts can occur in the near field or broadscale.

4.2 Water quality may be affected by soluble wastes associated with fin-fish farming. Soluble wastes include ammonia, phosphates and dissolved organic carbon emissions. The level of nutrient loads in the water column is influenced by flushing rates at farming sites.[1]

4.3 The Tasmanian regulatory regime establishes a permitted zone of impact 35 metres a lease boundary. Benthic composition may change due to elevated organic loading of the sediments from excess feed and solid fish excreta. Pollution tolerant species may come to dominate other species with the TSGA noting that this will be visually obvious.[2]

4.4 This chapter canvasses the evidence received in relation to waterway health commencing with general comments and then addressing specific issues raised in evidence: impacts of in-water net cleaning; broadscale impacts; and the effects of hatcheries on rivers. Finally matters relating to threatened and endangered species are addressed.

Waterway health in Tasmania

4.5 The Kingborough Council pointed to the importance of waterway health in areas where fin-fish fishing operates. Mr Stephen Wass, Mayor, stated in relation to the D'Entrecasteaux Channel:

> It is regarded as one of the safest waterways in the state. It not only provides a working area for the salmonid industry but is also a working bay for other industries. And certainly as far as the community and business go it is a recreational area. So from our perspective, the community's perspective, it is very important that this waterway is maintained in a healthy manner into the future so that all can continue to enjoy it. It is pleasing to note that over the last number of years Kingborough Council, Huon Aquaculture and Tassal have had a very good working relationship. Those companies have come on board in relation to what is called the D'Entrecasteaux collaboration. That collaboration aims at having people involved within the D'Entrecasteaux Channel to come together to work to

1 Tasmanian Salmonid Growers Association, *Submission 33*, p. 16.

2 Tasmanian Salmonid Growers Association, *Submission 33*, p. 14.

> ensure that the waterway and all life that that waterway supports will continue into the future.[3]

4.6 Some submitters to the inquiry stated that there had been adverse impacts on waterway health from fin-fish farming. For example, the Tasmanian Conservation Trust commented:

> The aquaculture industry in Tasmania is often represented as being clean and green and a positive development for the environment. In fact this industry has many negative effects on our environment, and these are going to become even worse if the industry's planned expansion become a reality.[4]

4.7 Mr Jon Bryan from the Trust added:

> I think it should be obvious that the aquaculture industry has environmental impacts. Fin-fish aquaculture in the marine environment as it is done in Tasmania has significant impacts on the environment including loss of amenity. These impacts are of concern to many. In some cases we believe that environmental impacts may be serious enough to impact the aquaculture industry itself.[5]

4.8 Environment Tasmania stated that the marine environment may not be able to cope with the expansion of fin-fish farming in south east Tasmania. It also commented that there has been an increased number of community reports of toxic algal blooms, declines in native fin-fish and shellfish numbers, algal epiphyte growth smothering marine vegetation, and nutrients impacting on macroalgal communities hundreds of metres away.[6]

4.9 The Tasmanian Abalone Council stated that, in relation to the D'Etrecasteaux Channel:

> …it is also commonly accepted now that the salmon industry is a major contributor of anthropogenic effects in the lower channel in particular, and so we have some concerns about their current practices and those practices going forward. We have concerns primarily about the waste products.[7]

4.10 The Tasmanian Abalone Council added that 'there is an underlying premise that the surrounding ecosystems can assimilate and break down the waste'.[8]

---

3 Mr Stephen Wass, Mayor, Kingborough Council, *Committee Hansard*, 15 July 2015, p. 13.

4 Tasmanian Conservation Trust, *Submission 92*, p. 10.

5 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 1.

6 Environment Tasmania, *Submission 93*, p. 11.

7 Mr Dean Lisson, Chief Executive, Tasmanian Abalone Council, *Committee Hansard*, 16 July 2015, p. 11.

8 Tasmanian Abalone Council, *Submission 74*, p. 4.

4.11 Other submitters commented that the waterway health of inland rivers had also been adversely affected by salmon hatcheries.[9]

4.12 Both the Tasmanian Government and the industry commented on the success of the regulatory regime and farming practices to ensure waterway health in marine lease areas. The Tasmanian Government pointed to the robust and adaptive regulation of the industry which is designed to ensure the impacts on waterway health and threatened and endangered species are identified and mitigated to the extent of an acceptable risk. In addition, it was noted that environmental impact statements, required for draft marine farming development plans (MFDPs), must identify impacts on the environment and threatened and endangered species as well as measures to mitigate the impacts.[10]

4.13 The Tasmanian Government also stated that management controls contained in MFDPs, and licence conditions contained in marine farming and freshwater fish farm licences, provide mechanisms to manage the impacts of salmonid farming on the environment. The Tasmanian Government concluded:

> When considered in the context of other jurisdictions, it is clear that the adopted approach for waterway management in Tasmania is world's best practice, particularly in relation to management of stressors to water quality.[11]

4.14 The TSGA submitted that the impact of salmonid aquaculture on waterway health is dependent on a number of factors, the nature and intensity of farming and the capacity of the receiving environment to assimilate the impacts. Other factors, such as natural catchment and oceanic inputs, also influence waterway health.[12]

4.15 In relation to water quality impacts, the TSGA commented on both the near field and broadscale. In the near field, 'the effect of feed input and fish excreta at any salmonid farm is expected to result in localised environmental impacts to water quality within and around a lease area'. In relation to broadscale impacts on water quality, the TSGA stated that 'salmonid farm derived nutrient inputs were not anticipated to result in significant or broadscale effects to the water quality characteristics or ecosystem'. However, further research is currently being undertaken.[13] In relation to benthic impacts, the TSGA commented that impacts on the near field benthos are 'largely predictable and reversible' and added that the deposition

---

9 See Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 18; Mr Geoffrey Swan, *Submission 99*; Mr Robert Dax, *Submission 100.*

10 Tasmanian Government, *Submission 35*, p. 19.

11 Tasmanian Government, *Submission 35*, p. 19.

12 Tasmanian Salmonid Growers Association, *Submission 33*, pp 14, 16; see also Dr Catriona Macleod, Institute for Marine and Antarctic Studies, *Committee Hansard*, 16 July 2015, p. 42.

13 Tasmanian Salmonid Growers Association, *Submission 33*, p. 16.

to the seafloor of excess feed and solid fish excreta is very well understood'.[14] It was stated that 'evidence from the BEMP in the Huon Estuary and D'Entrecasteaux Channel show no evidence of effects on the condition of the seafloor and faunal communities as a result of salmon farming'.[15] Nevertheless, the committee received evidence from submitters that expressed concern about broadscale impacts. The issues they raised are discussed later in this chapter.

4.16 Dr Adam Main, Chief Executive Officer, TSGA, commented further on concerns about the impact of fin-fish aquaculture on waterway health. He stated that the industry's position is that:

> …the health of Tasmanian waterways reflects historical and current marine and terrestrial influences from both natural and man-made sources—not the least of which is a changing climate. We accept that we should be part of the discussion regarding the health of Tasmanian waterways. We do not, however, for one moment accept the oft-cited mantra—namely, that there is a problem and we should be a part of it. We reject categorically that there is a problem.[16]

4.17 The TSGA commented on the need for the industry to ensure waterway health and stated:

> Minimising the environmental impacts of marine aquaculture is a common goal for regulatory authorities and producers because environmental quality, growth and health of fish and farm profits are inextricably linked. Internationally, many countries and independent global organisations have developed aquaculture best management practices to improve the environmental and financial performance of aquaculture operations.[17]

4.18 Dr Main went on to note that the industry is highly visible, works within a regulatory framework:

> You can see our industry and, through the regulatory framework, you can see everything that is happening within our industry. We are out there to be looked at and to be judged, but, more importantly, we need really good water to grow really good fish. If we do not have good water, we will not be able to grow good fish. So we have those as push factors within the companies. They know that, to manage a whole range of issues that affect other places around the globe, we need to maintain our waterways, because that means that we can grow good fish. We have been able to achieve that and demonstrate that.[18]

---

14 Tasmanian Salmonid Growers Association, *Submission 33*, p. 14.

15 Tasmanian Salmonid Growers Association, *Submission 33*, p. 15.

16 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, pp 26–27.

17 Tasmanian Salmonid Growers Association, *Submission 33*, p. 31.

18 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 37.

4.19 The Tasmanian Seafood Industry Council concluded that:

> In any consideration of the impacts of marine farming it must be recognised as with any farming activity there will be an impact at least [at] the local near field level. What must be taken into consideration is that it is not in the best interests of marine farmers to alter the environment to an extent that marine farming activities are compromised.[19]

Issues concerning waterway health in Tasmania

4.20 As noted above, some submitters commented that the fin-fish aquaculture industry was impacting adversely on waterway health in Tasmania. The following discussion canvasses there major issues raised in evidence:

- possible adverse impacts from in-water cleaning of nets;
- broadscale impacts on rocky reefs in south east Tasmania; and
- the effect of hatcheries on inland rivers.

4.21 Evidence relating to aquaculture activities in Macquarie Harbour is discussed in chapter 6.

In-water cleaning of nets

4.22 Biofouling occurs on submerged surfaces when unwanted marine organisms grow. In the fin-fish aquaculture industry, as the areas are used for intensive production, large volumes of organic material such as leftover fish food and faeces are a source of food for biofouling organisms. Biofouling occurs on the infrastructure used in production including nets, cages, ropes, floats, boats and barges.

4.23 High levels of biofouling can lead to increased hydrodynamic drag, reduced buoyancy, poor flow and low dissolved oxygen, resulting in increased cleaning and maintenance costs. Depending on their composition, biofouling communities can also harbour disease, toxins, Invasive Marine Species (IMS), cause irritation and lesions in salmon, and adversely affect the caging and associated infrastructure.[20]

4.24 Until recently, the fin-fish aquaculture industry used copper-based anti-fouling agents to curtail biofouling. However, following concerns about the environmental impact of copper, the industry has moved away from copper-based agents. In-water cleaning operations have been introduced to manage biofouling on fish cage nets. The industry uses in-situ Marine Inspection Cleaner (MIC) technology for washing nets. This involves using high pressure blasting or vacuuming to remove biofouling from the net surface of the pen before it reaches mature stages or heavy

19 Tasmanian Seafood Industry Council, *Submission 19*, p. 4.

20 Biofouling Solutions Pty Ltd, *Submission 7*, p. 1.

growth. The TSGA noted that 'particulate organic matter is released to the environment through this process'.[21]

4.25 The TSGA has produced a Best Management Practice guideline for in-water cleaning which details net washing practices to reduce impacts on the marine environment. The TSGA noted that ongoing research and monitoring is being undertaken to further refine best practice in relation to:

- general mass balance calculations around net cleaning emission volumes and overall assimilation capacity;
- updating the marine biosecurity and biofouling management plan for the industry;
- continual improvement of onsite surveillance and monitoring programs and strengthening this in relation to natural seasonality; and
- linkages to international work being undertaken around emission capture and beneficial reuse.[22]

4.26 The Tasmanian Government noted that net cleaning information is reported to the regulator, in addition to a range of other information, and is used by DPIPWE to determine monitoring survey specifications and focus monitoring effort in appropriate locations within and outside operational lease sites.[23] Mr Graeme Woods, DPIPWE, added that monitoring activities:

> …not only looks at the benthos or the sediment chemistry and the organisms within the sediments but also involves very targeted underwater video surveys. Those surveys are basically targeted at cage sites that have the highest frequency of in-water cleaning. The idea there is to be able to detect any potential effects from that activity underneath the cages and outside the lease areas. To date we have not detected any substantial sedimentation effects as a result of that cleaning activity.[24]

4.27 The move away from copper-based antifouling paint on farming infrastructure was acknowledged as a major change for the aquaculture industry and had resulted in a significant benefit for the marine environment. Dr John Whittington, DPIPWE, stated:

> …it is really important to recognise what an innovation this has been, because previous to in situ net cleaning the mechanisms for cleaning nets and managing nets involved the use of copper based antifoulants, which potentially have an impact on the environment. Moving to this technology

---

21 Tasmanian Salmonid Growers Association, *Submission 33*, p. 17; see also Tasmanian Salmonid Growers Association, *Response to submissions*, p. 7.

22 Tasmanian Salmonid Growers Association, *Submission 33*, p. 17.

23 Tasmanian Government, *Submission 35*, p. 11.

24 Mr Graeme Woods, Acting Manager, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 7.

> has significantly reduced the risk of environmental contamination by salmon farming by essentially taking copper out of the system. So I think that is something that really needs to be celebrated. It has also improved fish handling, because there is a lot less movement in having to move fish around as nets are changed, so I think there are some really good benefits there from both a production and an animal welfare perspective.[25]

4.28 The TSGA also commented that in-water cleaning has 'considerably reduced the need for land based net cleaning and maintenance'. In addition to the introduction of in-water cleaning, the TSGA stated that the progressive introduction of new technology nets has resulted in a two-thirds decrease of in-water net washing output.[26]

4.29 However, a number of submitters commented negatively on the move to in situ net cleaning.[27] For example, Biofouling Solutions Pty Ltd commented that there is the risk that in-water net cleaning can facilitate the spread and proliferation of dislodged viable biofouling organisms to the wider environment, and even the spread of IMS.[28] Biofouling Solutions recommended the development of an overarching Biosecurity Management Plan, an appraisal of current in-water net cleaning operations and surveillance and monitoring of IMS. Biofouling Solutions concluded:

> The uncertainties and associated risks with current biofouling and IMS management practices highlights the need for a critical assessment of risks associated with net cleaning and a robust, independent review of the biosecurity system requirements across the state of Tasmania.[29]

4.30 Two seafood industry submitters, Dover Bay Mussels and the Tasmanian Abalone Council, also commented negatively about the change to in-water cleaning and its possible impact on waterway health. Dover Bay Mussels stated that in-water net cleaning resulted in 'industrial quantities of fragmented marine biofouling being introduced in to marine environment'. It was stated that a major component of this fouling are hydroids, a member of the jellyfish family, which have a hard chitonous exoskeleton that, when fragmented, release large volumes of nematocysts (stinging cells) into the water. Dover Bay Mussels stated that nematocysts are known to cause gill damage in the caged salmon. It went on to comment that no studies have been undertaken into the potential impact of nematocysts on the health of other marine organism gills. It was also stated that studies show that, due to small particle size of net wash material, it will spread far beyond the current 35 metre monitoring point.[30]

---

25 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 7.

26 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 7.

27 See Mr David Abbott, *Submission 42*, p. 2; Mr Lance and Mrs Jen Hadaway, *Submission 73*, p. 2.

28 Biofouling Solutions Pty Ltd, *Submission 7*, p. 2.

29 Biofouling Solutions Pty Ltd, *Submission 7*, p. 4.

30 Dover Bay Mussels, *Submission 41*, p. 2.

4.31 Dover Bay Mussels concluded:

> …this shift to In-Situ Net Cleaning although done with good intentions has not had the potential impacts on the surrounding environment fully investigated, it has evolved without any checks or balances and the risk for harm is real and warrants further investigation before further expansion is allowed.[31]

4.32 The Tasmanian Abalone Council commented that there is no requirement that the waste (biofouling or equipment coatings) generated by in-water cleaning is to be captured or removed from the marine environment. Previously, nets had been cleaned onshore in semi-closed systems with waste being captured. The use of in-water cleaning 'results in waste being deposited directly into the marine environment and thereby removing the farms responsibility to capture and process its biofoul by-products'.[32]

4.33 Mr Dean Lisson, Tasmanian Abalone Council, commented that:

> …the salmon industry here in Tasmania operates on this premise that whatever waste products that go into the water—the waste from the salmon itself, the uneaten feed pellets, the biofouling from the cleaning of the nets; all of those things—will be assimilated by the environment and there will not be any long-term detrimental effects on the environment.[33]

4.34 In response to the industry's claim that in-water cleaning of enables nets to be cleaned while relatively free of biofouling, thereby minimising waste, the Council stated that this premise was 'flawed as previously the method of removing nets for washing deposited very little waste at the lease site, so any in-water cleaning methods increase the overall input into the environment'.[34] The Tasmanian Abalone Council recommended that the industry cease in-water cleaning of equipment until waste capture technology is available and becomes a regulatory requirement.[35]

Response to issues raised in evidence

4.35 The TSGA responded to concerns about in-water net cleaning and stated that cleaning is undertaken frequently to optimise fish health, lessen the level of outputs that need to be assimilated by the sediment and surrounding environment, to prevent the establishment and colonisation of potentially harmful species and to maintain high

31 Dover Bay Mussels, *Submission 41*, p. 14.

32 Tasmanian Abalone Council, *Submission 74*, p. 5.

33 Mr Dean Lisson, Chief Executive, Tasmanian Abalone Council, *Committee Hansard*, 16 July 2015, p. 13; see also Tasmanian Abalone Council, *Submission 74*, p. 5.

34 Tasmanian Abalone Council, *Submission 74*, p. 6.

35 Tasmanian Abalone Council, *Submission 74*, p. 14.

levels of water flow and in cage environmental conditions.[36] The TSGA added that as a result of the high frequency of cleaning:

> …tunicates, shellfish and colonising hydroids do not have sufficient time between net cleaning events to become well established on net surfaces. It is recognised in some literature that large volumes of fragments of some hydroid species may have a detrimental effect on fish gills; this is a different species of hydroid than is present in Tasmanian waters.[37]

4.36 Dr Main concluded that:

> We are confident that the impact of the net cleaning falls within our farm footprint. We have a very defined farm footprint.[38]

4.37 The TSGA also noted that a two year study investigating deposition of net wash in and around leases and the hydrodynamics of various sites had been undertaken. It was shown that there was minimal impact and net wash organics were assimilated within lease space by natural benthic biological processes. The TSGA went on to state that these findings are supported by data from annual compliance assessments.[39]

4.38 In relation to technology to capture debris from in-water cleaning, the TSGA stated that it was following international research and development work being undertaken on filter technology.[40] In addition, further research is being undertaken to determine the risk factors associated with net cleaning.[41] Mr Graham Woods, DPIPWE, explained that the research is aimed at investigating a range of concerns raised including those by Dover Bay Mussels. The research is being undertaken by the Institute for Marine and Antarctic Science (IMAS) and is a precursor to a wider research project investigating the effects of salmon nutrient emissions on nearby reef systems and macroalgae communities.[42] This is discussed further in the following section.

---

36 Tasmanian Salmonid Growers Association, *Response to submissions*, pp 18–19.

37 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 7.

38 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 34; see also Tasmanian Salmonid Growers Association, *Response to submissions*, p. 7.

39 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 18.

40 Tasmanian Salmonid Growers Association, *Response to submission*, p. 7; see also Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 35.

41 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 20.

42 Mr Graeme Woods, Acting Manager, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 7.

Broadscale impacts of fin-fish farming

4.39 Submitters expressed concern that the impacts of the fin-fish industry at the far-field or broadscale level were not adequately understood or regulated. Dr Catriona Macleod, The IMAS, commented that a great deal of research has been undertaken on what is generally called the broadscale effects but these relate to water column interactions rather than reef or intratidal interactions.[43] The impacts on reef systems in the south east of Tasmania were raised by the Tasmanian Abalone Council and Environment Tasmania.

4.40 The Tasmanian Abalone Council released a report in October 2014 in response to plans by the salmonid industry to expand in to waters adjacent to productive wild abalone beds. The report commented on a range of issues including the potential for nutrient input from salmonid farming to affect the structure and biodiversity of inshore oceanic reef communities; and the effect of sediment from salmonid farming on abalone larvae and adult abalone.[44]

4.41 The committee notes that the Tasmanian Government, on the day of the committee's first hearing in Hobart, released a review by Professor Colin Buxton on a report by the Tasmanian Abalone Council on the risks to the Tasmanian abalone fishery from further expansion of the salmonid industry.[45] Professor Buxton's major findings were outlined by Dr Whittington who commented:

> …essentially, there was no evidence for a direct cause-and-effect relationship between the loss of abalone productivity and salmon farming. His report basically finds that there is no link between salmon farming and abalone productivity. There is a whole lot of reporting around that, but that is, essentially, the crux of it.[46]

4.42 Dr Main, TSGA, also commented on the findings in Professor Buxton's report and stated:

> …it seems from my early understanding that it supports exactly what I have just said: our impact is in our farm footprint. The risk or the threat of in situ cleaning, or salmon farming output in general, does not have that far-field effect. It is quite gratifying to have that validated…[47]

---

43 Dr Catriona Macleod, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, pp 40–41.

44 Tasmanian Abalone Council, *Submission 74*, Attachment 3.

45 C Buxton, *Review of the Tasmanian Abalone Council Report on Risks to the Abalone Fishery from Further Expansion of the Salmonid Industry*, July 2015.

46 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 8.

47 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 34.

4.43 The committee received other evidence which commented on the potential impact of farming activities on reef health. Environment Tasmania, for example, noted that 5,500 tonnes of feed can be used in one fish lease in south east Tasmania. This corresponds to an input of 275 tonnes per year of nitrogen, of which 41 tonnes is released into the environment. Environment Tasmania commented:

> This represents a significant increase of nitrogen to sediments and nearby reef and kelp communities. It is possible that the effects of this increase in available nitrogen could lead to changes in reef ecosystem structure, biodiversity, biomass and productivity, and more importantly impact on the endangered and vulnerable species in the area. However there are no monitoring programs established to monitor the impact of this significant increase in nutrients on these ecosystems.[48]

4.44 Environment Tasmania also provided the committee with a recently published paper on the broadscale impacts of farming on macroalgal assemblages on rock reefs in Tasmania.[49] Environment Tasmania noted that the findings included that:

- the extent of the impact of dissolved wastes is poorly known both in Tasmania and elsewhere;
- nutrient enrichment from fish farms affects subtidal reef communities to a variable distance, and at scales of hundreds of metres, but rarely kilometres;
- given consistent findings from multiple sites, the most plausible explanation for observed differences in algal communities is impact from the release of nutrients from fish farms;
- fish farms had a significant effect on benthic reef communities at greater distances than regulatory compliance sites; and
- ongoing nutrient enrichment from fish farms remains a potential threat to macroalgal community structure and reef diversity through the long-term.[50]

4.45 The TSGA responded to concerns about the possible impacts on rocky reefs including the paper provided by Environment Tasmania. In relation to the paper, the TSGA stated the paper is based on work completed in 2009 and information from this work has been incorporated in a number of research initiatives in recent years.[51]

4.46 The TSGA also commented that marine farming regulations prohibit the siting of a fin-fish zone over a rocky reef. However, the TSGA stated that potential broadscale impact of fin-fish farming on nearby rocky reefs has been recently identified as a gap in knowledge. In response to this gap in knowledge, two projects

48 Environment Tasmania, *Submission 93*, p. 11.

49 E Oh *et al*, 'Broad-scale impacts of salmon farms on temperate macroalgal assemblages on rocky reefs', *Marine Pollution Bulletin*, 2015.

50 Environment Tasmania, *Supplementary Submission 93*, pp 2–3.

51 Tasmanian Salmonid Growers Association, *Supplementary Submission 33*, p. 1.

have been funded by the Fisheries Research and Development Corporation (FRDC). The TSGA noted that the research will be aimed at addressing the concerns raised by the Tasmanian Abalone Council, Environment Tasmania and other stakeholders:

> ….[it] has been framed with the specific intention of addressing key concerns of industry (both aquaculture and fisheries), regulators and other stakeholder groups on how finfish farming in new areas could change environmental interactions…the purpose of the research is to evaluate the potential for interactions between local reef systems and salmon farming, and recommend industry and Government appropriate monitoring and assessment approaches based on risk mitigation strategies.[52]

4.47 The first will investigate the broadscale interactions of salmon farming with reef systems through sediment deposition and nutrient dispersion, including the development of risk appropriate approaches for assessment and monitoring of reef health. The IMAS, the Tasmanian Abalone Council, the rock lobster industry, the recreational fishing industry and the salmon industry are collaborating on the study.[53]

4.48 Dr Macleod informed the committee that there will be steering committees that comprise the stakeholders as well as a community reference group and a science reference group. Dr Macleod commented that:

> …we are actively trying to engage with the broader community to explain to them what the research is going to be doing and get feedback from them as to whether it is addressing the issues they would like to see addressed. I have to acknowledge to the community that we cannot potentially address every issue, but where we can we will try to transfer the information back to them that is relevant to the issues of concern.
>
> But also, most significantly out of this, the scientific reference committee as part of this project is something I am really enthusiastic about, because it will allow us to engage with other scientists working in and around the area, which is something that is often not done with research projects going forward—scientists who may not be part of the active research project but have very valuable insights and information about the areas we are researching. We are really excited about that project kicking off.[54]

4.49 The IMAS is also undertaking analysis as a precursor to this study with the aim to determine whether there have been any broadscale changes associated with the development of the salmon industry at Tinderbox and Ninepin Points.[55]

---

52 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 19.

53 Dr Catriona Macleod, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 45; see also Institute for Marine and Antarctic Studies, *Submission 20*, p. 8; Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard*, 15 July 2015, p. 47.

54 Dr Catriona Macleod, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 45.

55 Institute for Marine and Antarctic Studies, *Submission 20*, p. 18.

4.50 Further information on the study was provided at the Budget Estimates in May 2015 by the FRDC. The FRDC stated that the project had been identified as a 'high priority'. In relation to outcomes, Mr Patrick Hone, Executive Director, FRDC, commented:

> Like all science, that is an uncertainty. This is a process to look at a range of questions that we have in salmon farming, particularly because, as many people would be aware, it is a continually expanding development. We have to keep up in terms of that expansion to make sure that the increasing biomass of salmon is consistent with the ability of the environment to be resilient in terms of how it will respond. They are also now expanding into areas that they had not done previously. As you are probably aware, they are going into much more deeper, exposed environments. These are areas in which we previously had not done research. So we are testing a whole lot of new hypotheses about dispersion, impact, down-stream currents, et cetera.[56]

4.51 Mr Hone went on to state that environmental research will continue for many years and concluded that:

> Our feeling is that this will also result in some significant policy changes. But there will be more policy questions that will come forward and that will require an ongoing environmental research program.[57]

4.52 The Tasmanian Conservation Trust welcomed the study but commented that it 'should have been carried out before aquaculture expansion was permitted to occur to the extent that it has'.[58] The Tasmanian Seafood Industry Council also commented on these research projects. Mr Julian Harrington stated that in the Council's view:

> …where it is demonstrated that fin-fish farming activities are having an unacceptable negative impact on the activities of other stakeholders who have access to Tasmania's marine resources and/or an unacceptable impact on the broader marine environment, then fin-fish farming practices must be altered to alleviate any impacts.[59]

4.53 In addition, the TSGA stated that while early work on macroalgal communities found that there were no trends in macroalgae communities that could be attributed to fish farming in the area, the industry has funded a two year study aimed

---

56 Mr Patrick Hone, Executive Director, Fisheries Research and Development Corporation, *Rural and Regional Affairs and Transport Legislation Committee, Budget Estimates Hansard*, 25 May 2015, pp 153–54.

57 Mr Patrick Hone, Executive Director, Fisheries Research and Development Corporation, *Rural and Regional Affairs and Transport Legislation Committee, Budget Estimates Hansard*, 25 May 2015, p. 154.

58 Tasmanian Conservation Trust, *Submission 92*, p. 3.

59 Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard*, 15 July 2015, p. 47.

at characterising the status and health of macroalgal communities in south east Tasmanian waters.[60]

Inland hatcheries

4.54 The committee received evidence on the long-standing concerns about the impact on the health of inland river waterways from hatcheries.

4.55 Fresh water hatcheries produce smolt for deep water farms. They are either flow-through, that is they use river water, or recirculation hatcheries. The Environment Protection Authority (EPA) noted that recirculating aquaculture systems provide better control over fish growing conditions and use significantly less water (compared to flow-through systems). When their wastes are managed by beneficial reuse (for example, sustainable irrigation on agricultural land) emission of nutrients to waterways is avoided.[61]

4.56 The Tasmanian Government provided the committee with information on an environmental review of inland fish farms to be undertaken by the EPA:

> In 2014, in light of the ongoing expansion of the salmon industry and the subsequent increase in production and development at the inland fish farms to meet demand for smolt, an environmental review of the large scale inland fish farms is being conducted by the Environment Protection Authority Division and Inland Fisheries Service, beginning with a review of the regulatory conditions and environmental performance of existing activities.
>
> The purpose of the review is to assess current environmental performance and review existing environmental regulation of these activities. Following review of the existing activities the Environment Protection Authority Division will then review the regulatory framework for these activities in a consultative process with stakeholders.[62]

4.57 The Tasmanian Government went on to state that the Inland Fisheries Service and EPA continue to actively deal with water quality management in new farm licences, renewals and to address issues raised about the hatcheries.[63]

4.58 A number of submitters commented on the Huon Aquaculture hatchery on the Russell River.[64] The original hatchery on the Russell River was purchased by Huon

---

60 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 9.

61 Environment Protection Authority, *Annual Report 2013–14*, p. 35.

62 Tasmanian Government, *Submission 35*, p. 15.

63 Tasmanian Government, *Submission 35*, p. 15.

64 See Tasmanian Aquaculture Reform Alliance, *Submission 95*, pp 18–19; Ms Miranda Howie, *Submission 97*, p. 3; Mr Geoffrey Swan, *Submission 99*; Mr Richard Dax, *Submission 100*, p. 1; Ms Rebecca Hubbard, Marine Coordinator, Environment Tasmania, *Committee Hansard*, 16 July 2015, p. 3.

Aquaculture in 2006. It was argued that the hatchery releases nutrient rich water into the Russell River which results in a decline in water quality below the hatchery including algal growth.[65] In addition to concerns about water quality, Ms Vicki O'May commented that the numbers of native endemic marine species, including water rats and platypus as well as nymph, dragon fly and other insect life, have declined on the river.[66]

4.59 Huon Aquaculture responded to concerns raised in submissions and noted that the Lonnavale Hatchery on the Russell River is operated under Tasmanian Government regulation. Huon Aquaculture provided the committee with a detailed response to comments in submissions and noted that a study of the health of the Russell River had recently been undertaken. The study found that:

> There therefore appears to have been no major negative impact of the raised algal levels on the fauna of the Russell River. The overall ecological impact therefore appears slight. Any management decision with regard to controlling algal density through management prescriptions at the Huon Aquaculture site should be made in this light.[67]

4.60 The TSGA also responded to concerns about hatcheries and stated that the industry is committed to the responsible management of all its freshwater operations. The TSGA refuted claims that there is no independent monitoring of hatchery facilities and stated that the industry undertakes extensive monitoring to ensure it meets rigorous environmental standards as required by the regulation.

4.61 In relation to comments in submissions about the presence of algae, the TSGA observed that algae has been detected both down and upstream of freshwater hatcheries in the Huon and Channel area. It added that it 'is important to note that there are a variety of inputs into these freshwater systems and the industry continues to carefully monitor its contribution and work within the relevant regulation'.[68]

4.62 The TSGA concluded that flow-through hatcheries are still playing an important, but transitioning, role in the salmonid industry with the industry currently undertaking large investments in new constructing new, state of the art recirculation hatcheries.[69]

---

65 Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 19.

66 Ms Vicki O'May, *Submission 57*, p. 1.

67 Huon Aquaculture, *Response to submission from Mr Geoffrey Swan*, p. 2.

68 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 23.

69 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 23; see also Mr Chris Dockray, Chairman, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 26.

Committee comment

4.63 The committee acknowledges the importance of ensuring the health of Tasmania's waterways in areas where fin-fish farming is undertaken. The committee notes that operating practices have changed over time to ensure that, as more information emerges on the effects of the fin-fish industry on the marine environment, waterway health is maintained. This is a result of the industry's commitment to ensuring its continued sustainability and limiting its impact on the marine environment and the Tasmanian Government's commitment to a robust adaptive management framework.

4.64 One area of change has been the industry's move away from copper-based paint to control biofouling. This is a welcome change to fin-fish operations and will decrease the amount of copper contamination of the marine environment. While there are concerns about in-water cleaning practices, the committee notes that there is ongoing research, and modification of farm activities, to ensure that any impacts from in-water cleaning on the marine environment are within acceptable limits.

4.65 The committee notes the concerns raised by some submitters about the lack of adequate knowledge about broadscale interactions, particularly on rocky reefs. The committee considers that demonstrated adverse effects on far-field marine environments arising from fin-fish farming operations would not be an acceptable outcome for the environment or other aquaculture industries, such as the abalone industry, which are reliant on the health of Tasmanian waterways. However, at this point in time, it remains unclear that adverse effects are occurring in rocky reef environments or that any observed changes are the result of fin-fish farming activities.

4.66 The committee welcomes the research which is now underway to address the concerns about the lack of knowledge of broadscale interactions. The research involves many stakeholders in the industry, including the Tasmanian Abalone Council. The committee notes the engagement with the broader community in the research process. The committee is confident that, should it be demonstrated that there are unacceptable negative effects from fin-fish activities, the adaptive management regulatory regime will ensure that rocky reef environments are protected and that appropriate monitoring and management controls for the fin-fish industry are developed and implemented.

4.67 In relation to freshwater hatcheries, an environmental review of large scale inland fish farms is currently being undertaken by the Tasmanian Environment Protection Authority. In addition, the committee notes the outcomes of the recently completed study of concerns arising from farming activities at the Russell River hatchery. The committee has confidence that work to be undertaken by the Environment Protection Authority will inform future policy making in relation to inland hatcheries.

Threatened and endangered species

4.68 Evidence was received on the impact of the fin-fish industry on threatened and endangered species. Threatened and endangered species are listed under Commonwealth and Tasmanian state legislation.

4.69 The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) gives the Commonwealth Government responsibility for listed nationally threatened species and ecological communities as a matter of national environmental significance. Threatened species also receive protection through the protection of other matters of national environmental significance, for example, where they occur in protected areas such as world heritage properties, national heritage places, Ramsar wetlands, Commonwealth marine areas and the Great Barrier Reef Marine Park.

4.70 The EPBC Act requires the responsible minister to establish a list of threatened species divided into the following categories:

- extinct;
- extinct in the wild;
- critically endangered;
- endangered;
- vulnerable; and
- conservation dependent.[70]

4.71 Once listed, threatened species and ecological communities (except ecological communities listed in the category of 'vulnerable') are recognised as a matter of national environmental significance. Consequently, any action that is likely to have a significant impact on listed threatened species and ecological communities under the EPBC Act must be referred to the minister and undergo an environmental assessment and approval process.

4.72 Marine species listed under the EPBC Act, in the areas where aquaculture activities take place, include Australian and New Zealand fur seals, Maugean skate (listed as endangered) and spotted handfish (listed as critically endangered). In addition, a number of birds are listed.[71]

4.73 The primary Tasmanian legislation is the *Threatened Species Protection Act 1995*. This Act lists a number of marine species including numerous coastal or oceanic bird species, four whale species, three seastar species, the spotted handfish, the Gunn's screwshell and the Maugean skate. A range of measures to protect listed threatened

---

70 EPBC Act, s. 178(1).

71 Department of the Environment, *Listed threatened species and ecological communities*, http://www.environment.gov.au/epbc/what-is-protected/threatened-species-ecological-communities (accessed 24 July 2015)

species are set out in the Act and makes it an offence to take a listed species without a permit.

4.74 In addition, regulations made under the Tasmanian *Nature Conservation Act 2002* list 'Specially Protected' or 'Protected Wildlife'. A large number of marine mammals and coastal or oceanic bird species are listed as either Specially Protected or Protected Wildlife. The protection of a number of fish species, including five shark species and all handfish species that occur in Tasmania, is provided for under the Fisheries (General and Fees) Regulations 2006. Freshwater species are listed and protected under the Threatened Species Protection Act and the *Inland Fisheries Act 1995*.[72]

4.75 The TSGA commented that the industry continues to support research to understand the potential impact on identified endangered and threatened species not only within the Macquarie Harbour system, but all areas where farming activities occur. The TSGA went on to state:

> The regulation of salmonid farming in Tasmania is robust and adaptive to ensure that the impacts on waterway health and threatened and endangered species are identified and mitigated to the extent of an acceptable risk.[73]

4.76 The IMAS also commented that interactions with threatened and endangered species have largely been addressed through zone assessments and appropriate site selection.[74]

4.77 However, the committee received evidence which raised issues in relation to threatened and endangered species. The following discussion canvasses the evidence received in relation to:

- Maugean skate;
- spotted handfish;
- fur seals; and
- birds.

Maugean skate

4.78 The Australian Marine Conservation Society stated that the Maugean skate is a rare and endemic species which is only found in Macquarie Harbour and Bathurst Harbour. It is adapted to low nutrient and low salinity environments of the harbours.[75] Environment Tasmania added that the Maugean skate has 'the oldest lineage of skate

72 Tasmanian Government, *Submission 35*, p. 6.

73 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 10.

74 Institute for Marine and Antarctic Studies, *Submission 20*, p. 2.

75 Australian Marine Conservation Society, *Submission 9*, p. 4.

in the world and the only one of its kind worldwide to occur mainly in brackish water, and with such a highly restricted distribution'.[76]

4.79 Submitters expressed concern about the impacts of the current level of aquaculture activities and proposed expansion fish farming activities in Macquarie Harbour. These concerns included the impact of increased nutrient levels, changes in the dissolved oxygen levels, and increased sedimentation; and the low population levels of the Maugean skate (estimated at only 2,500).[77]

4.80 EDO Tasmania commented that environmental organisations raised concern that not enough was known about the ecology or biology of the Maugean skate, or the likely movement of nutrients within Macquarie Harbour, to ensure the species would not be significantly impacted by the expansion of aquaculture activities in the Harbour.[78] The TSGA responded that the industry had identified, in the original Macquarie Harbour environmental impact statement, that Maugean skate was a species of interest requiring further research.[79]

4.81 Concerns regarding the potential impacts on the skate from aquaculture activities have led to the commissioning of a FRDC-funded project that to examine the movement, habitat utilisation and population status of the skate in Macquarie Harbour. The IMAS provided the committee with an overview of the project and commented that acoustic tagging has been used to track the movements (location and depth) of both skates and escaped salmonids. The project is providing data on the biology, ecology, habitat preferences, and environmental sensitivities of the Maugean skate that can be used to not only understand the potential risks to the species associated with salmon farming but also to provide a better understanding of other environmental risk factors.

4.82 The IMAS went on to note that one concern was that fishing (gillnetting) in the harbour may have an adverse effect on the Maugean skates, and because one of the main species targeted in gillnet fishing is salmonid escapees, the study will evaluate strategies to reduce the probability of encountering skates whilst fishing.[80]

4.83 The preliminary findings of the project indicate that some Maugean skate move widely throughout Macquarie Harbour, while others appear to be more site attached and the vast majority of their time is spent in the six to 15 metre depth range, although some individuals moved into deep or very shallow water. Environmental

---

76 Environment Tasmania, *Submission 93*, p. 7.

77 Australian Marine Conservation Society, *Submission 9*, p. 4; Mr Peter Schulze, *Submission 89*, p. 8; EDO Tasmania, *Submission 70*, p. 9; Dr Elizabeth Smith, *Submission 91*, p. 11.

78 EDO Tasmania, *Submission 70*, p. 9; see also Environment Tasmania, *Submission 93*, Attachment 2, p. 1.

79 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 10.

80 Institute for Marine and Antarctic Studies, *Submission 20*, p. 13.

data collected as part of the project are being analysed to examine how factors such as salinity and dissolved oxygen influence patterns of behaviour. IMAS noted that, although population size estimates are not yet available, it is clear from the catch rates that the population is substantially larger than the approximately 1000 individuals suggested in the past.[81]

4.84 The TSGA commented that the project findings indicted that detections of Maugean skate in depths greater than about 25 metres, which is the depth of the harbour in which the majority of the farms are located, were rare.[82] Further, that 'early results indicate that salmon farming is having no significant impact on the skate'.[83]

4.85 Dr Donald Ross, IMAS, indicated that it could not categorically be stated that the skate were not at risk. He went on to point to the developments in technology which will assist in greater understanding of skate and its habitat:

> One of the exciting things with that technology is that those acoustic tags can track where they are but they can also measure some environmental parameters. A company has just come out with a tag that measures oxygen so it can transpond the oxygen concentration back. They are looking at putting these tags on skates so we will actually be able to tell what environment skates are sitting in. It is pretty much cutting edge technology that is being brought to Tasmania to look at skate behaviour for that very reason.[84]

Spotted handfish

4.86 The Australian Marine Conservation Society commented that the spotted handfish is listed as critically endangered under the EPBC Act. The Society commented that the spotted handfish is potentially affected by farming activity, but 'there is limited understanding of the extent of impact due to a lack of monitoring' and stated the impact of salmon farming on this species warrants further and immediate investigation.[85]

4.87 The TSGA responded to concerns about the impact of farming activities on the spotted handfish. The TSGA stated:

> They are known to prefer inshore demersal habitats within a depth range of approximately 5 to 15 metres, and they have a limited and often fragmented range linked to habitat preference. Recently the handfish, was found within

81 Institute for Marine and Antarctic Studies, *Submission 20*, p. 21; see also Dr Donald Ross, Senior Research Fellow, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 43.

82 Tasmanian Salmonid Growers Association, *Submission 33*, p. 22.

83 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 10.

84 Dr Donald Ross, Senior Research Fellow, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 43.

85 Australian Marine Conservation Society, *Submission 9*, p. 4.

> one fish farm lease in the lower D'Entrecasteaux Channel, a region in which the handfish was no longer thought to exist. There is no current evidence that the industry either positively or negatively impacts on the handfish. Through annual monitoring programs the industry is well placed to provide further data on this important group of fish.[86]

Fur seals

4.88 Fur seals are listed as a protected marine species under the EPBC Act. The Tasmanian fin-fish industry has had to manage its interactions with Australian and New Zealand fur seals in south east Tasmanian since its inception in the mid-1980s. Mr Jon Bryan, Tasmanian Conservation Trust, explained to the committee that:

> There is a fundamental problem with seals and the aquaculture industry. To put this in context: a seal looks at a salmon like a cross between heroin and a 'big mac'. They just love salmon.[87]

4.89 A number of submitters raised concerns regarding the relocation of seals and killings of seals by the Tasmania salmonid industry. The Australian Marine Conservation Society commented that 'there have been persistent fur seal deaths due to interaction with aquaculture operations in the southeast region either through accidental drowning in farming nets, or deliberate killing by operators'.[88]

4.90 Problem seals are also relocated. However, the Tasmanian Scalefish Fisherman's Association (TSFA) also stated its main concern as:

> …the practice of relocating rogue seals from the precincts of fish farms to other waters. These rogue seals have commonly been relocated to the North coast and usually in places of easy access with special attention given to the ease of unloading the seals. Invariably these places have been adjacent to commercial scale fishermen's areas of operation.[89]

4.91 The TSFA commented that relocation of seals 'partially solves a problem for the aquaculture industry but creates a problem for the wild catch fisheries' and it suggested 'rather than move the problem, perhaps a more permanent solution may be found by euthanizing the problem seals – much the same as farmers being able to conduct vermin control'.[90]

4.92 In response to the TSFA's suggestion to euthanize seals Tassal stated:

---

86 Tasmanian Salmonid Growers Association, *Submission 33*, p. 22.

87 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 8.

88 Australian Marine Conservation Society, *Submission 9,* p. 4.

89 Tasmanian Scalefish Fisherman's Association, *Submission 94*, p. 1.

90 Tasmanian Scalefish Fisherman's Association, *Submission 94*, p. 2.

> Tassal is dismayed by the suggestion that euthanizing seals is a solution to the issue. In August 2011, as part of our partnership with WWF Australia, Tassal agreed to cease euthanasia of seals (unless in extreme circumstances and safety of staff is at risk).[91]

4.93 According to Tassal, seal relocation sites are chosen and regulated by DPIPWE.[92]

4.94 The committee heard evidence from Mr Bryan, Tasmanian Conservation Trust, in which he rejected 'the idea of killing seals or relocating them' as it avoids 'the fundamental problem, which is breaking that link between cages and food and seals'.[93]

4.95 The Tasmanian Conservation Trust also observed that a number of fish farming companies have effectively implemented cage technology to keep seals out of the salmon pens. The Trust stated that:

> Tassal, Huon Aquaculture and Van Diemen Aquaculture all have effective cage technologies and fish handling procedures that can be used to keep seals away from fish…there should also be a requirement for all farms to use appropriate cage technologies and fish handling procedures to prevent unwanted seal interaction. This will reduce the chance of seals continuing to associate fin-fish farms with food and make it easier for all farms to deal with this problem.[94]

4.96 Mr Bryan, Tasmanian Conservation Trust, went on to comment that:

> …I am absolutely enthusiastic about the industry's approach to this. My understanding is that Tassal—certainly; and I think Huon—have said they are no longer going to approve routine killing of seals. Van Diemen aquaculture has a system cage technology which seems to be pretty good at keeping seals away. I am very impressed with the work that is being done and I would encourage them to keep our seals safe and keep their workers safe by breaking that link between the seals and the food.[95]

4.97 The TSGA commented that 'significant time and expense has been devoted to better understanding' the behaviour of seals as well as 'designing and installing netting systems that minimise interactions and impacts on both seals and fish'.[96]

---

91 Tassal, *Response to the Tasmanian Scalefish Fisherman's Association submission*, p. 1.

92 Tassal, *Response to the Tasmanian Scalefish Fisherman's Association submission*, p. 1.

93 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 8.

94 Tasmanian Conservation Trust, *Submission 92*, p. 6.

95 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 8.

96 Tasmanian Salmonid Growers Association, *Submission 33*, p. 22.

4.98 Huon Aquaculture stated that is its seal and bird-proof pens are being rolled out across farms in southern Tasmania. Huon Aquaculture stated that 'the new pens are world first in seal protection that will deliver unparalleled safety improvements'.[97] Tassal outlined in its *Sustainability Report 2014* that its exclusion measures include the use of KikkoNet, K-Grid nets, seal proof bird nets and seal jump fences. In addition to these measures, Tassal's Senior Wildlife Management Officer 'conducts regular rigging audits of pens at each farming lease to ensure maximum exclusion capability'.[98] Petuna noted that its pen and net management has resulted in zero cage breaches by seals for the past three years. Petuna has a policy of no lethal interaction and does not routinely practice seal relocation. Petuna stated that there had been no seal fatalities in the past 16 years.[99]

4.99 The Tasmanian Seafood Industry Council were also supportive of the efforts of the salmonid aquaculture industry to manage seal interactions, as it stated:

> Industry has spent considerable time and effort in understanding seal behaviour so that net systems can be modified to minimise interactions with the seals and to avoid additional stress on the fish that is caused when a seal gains access to a pen, not to mention fish mortalities. The industry reports out to the regulator and wider community on interactions with seals. [100]

4.100 The committee notes the FRDC is currently funding research for the development of innovative seal exclusion technology.[101]

Birdlife

4.101 The risks to birds from aquaculture operations vary but include entanglement, loss of foraging habitat, behavioural change (for example, increased scavenging by raptors), disturbance reducing breeding success, and potential disturbance from noise, lighting, waste and vessel movements associated with daily and nightly operations.

4.102 Birdlife Tasmania commented that, with the exception of the Great Cormorant and Little Black Cormorant, all species of seabirds in Tasmania are protected under the Tasmanian Threatened Species Protection Act and associated regulations and many are also listed as marine and/or migratory species under the EPBC Act. Birdlife Tasmania went on to comment that some birds involved in entanglements and/or that died as a consequence could be reasonably be expected or inferred to be EPBC-listed species.

---

97 Huon Aquaculture, *Sustainability Dashboard*, http://dashboard.huonaqua.com.au/

98 Tassal Group Limited, *Sustainability Report 2014*, p. 33.

99 Petuna, *Creating a Sustainable Future in Aquaculture*, p. 17 http://www.petuna.com.au/wp/wp-content/themes/petuna/img/Petuna-Sustainable-Living-Book-SML.pdf

100 Tasmanian Seafood Industry Council, *Submission 19*, p. 4.

101 Fisheries Research and Development Corporation, *Submission 8*, p. 6.

4.103 In addition, Birdlife Tasmania noted that the Tassal *Sustainability Report 2013* stated that 498 Great Cormorants had been shot by Tassal at Russell Falls and Macquarie Harbour during that year. Birdlife Tasmania commented:

> BirdLife Tasmania opposes any form of wildlife control such as shooting, and has raised our concerns regarding this report and the broader issue of seabird entanglement with Tassal over a number of years.[102]

4.104 Birdlife Tasmania also commented that the behaviour of gulls in the south east had changed and many were present at aquaculture facilities. As a consequence, there are bird entanglements with nets. While noting that Tassal and Huon Aquaculture have made efforts to reduce interactions between seabirds and their infrastructure, Birdlife Tasmania stated that it was aware that the numbers of entanglements have been in the hundreds for a species in a calendar year, 'representing a significant proportion of the regional population'. Birdlife Tasmania also commented that it had obtained data from DPIPWE on gull management and control measures under a Right to Information request but had yet to analyse the data.[103]

4.105 BirdLife Tasmania has been involved with both companies, either directly or through consultants, in the provision of data and advice on minimising the risks to threatened and endangered species listed under the Tasmanian and Commonwealth legislation that have been recorded within five kilometres of a lease or proposed lease site. The species assessed were the raptors such as the Wedgetailed and the White-bellied Sea-eagles, seabirds such as the Shy Albatross and woodland birds such as the Forty-spotted Pardalote and the Swift Parrot.

4.106 Birdlife Tasmania explained that :

> For each identified species/threat combination, the threat to the species was identified and mitigation or minimisation measures were identified. In most cases, the risks were assessed as low, but for some species novel threats were identified arising from the use of strong lights used to illuminate facilities at night. Strong lights present a potential risk by disorienting birds, resulting in an increased risk of collision with facilities. Altering the lighting regime and reducing light spill outside of the facilities is likely to reduce the potential to disorient flying birds.[104]

4.107 Tassal reported on bird entanglements, including deaths, in its *Sustainability Report 2014*. It was stated that:

> There has been an overall steady improvement in regard to bird interactions and welfare outcomes since reporting began in April 2013. The

102 Birdlife Tasmania, *Submission 15*, p. 6.

103 Birdlife Tasmania, *Submission 15*, p. 3.

104 Birdlife Tasmania, *Submission 15*, p. 7.

> implementation of our Seabird Rescue Strategy has enhanced welfare outcomes for the rare cases where birds require care.[105]

Committee comment

4.108 The committee acknowledges the efforts of the Tasmanian fin-fish industry to proactively manage its interactions with threatened and endangered species. The industry is currently undertaking research into Maugean skate and has introduced management programs and changes to fish farm infrastructure to limit bird entanglements.

4.109 In relation to seals, the evidence presented to the committee indicates that the development and implementation of new pen and net infrastructure is the most effective solution for the fin-fish industry to deal with seals, as it reduces the industry's reliance on relocating problem seals. The industry's investment in the development of new pen and net infrastructure to reduce the number of seal interactions is welcomed. In addition, the industry now does not euthanize seals unless in exceptional circumstances.

4.110 In relation to bird interactions, the committee notes that some information is available from individual companies. However, more complete datasets are held by the regulator. The committee considers that there should be greater access to information on bird interactions. This information would fall within environmental information which the committee believes should be more freely available (see Recommendation 1).

Marine debris

4.111 The committee received submissions which commented that aquaculture activities contributed to large amounts of marine debris. Marine debris from aquaculture operations includes:

- rope waste;
- black hard plastic shavings from pipe modifications;
- black plastic feedpipe;
- treated pine and other timber;
- polystyrene filled buoys;[106] and
- general debris discarded by workers.

4.112 Submitters noted that debris from farming activities was not only unsightly but also posed a threat to wildlife through ingestion or entanglement.[107] Environment Tasmania commented:

---

105 Tassal Group Limited, *Sustainability Report 2014*, p. 34.

106 Ms Sarah Lowe, *Submission 68*, p. 2.

> Marine debris from fish farm activities has been a significant concern for many local residents, waterway users and conservationists for years. Death caused by entanglement in fish farm nets and long ropes is difficult to assess on an individual lease by lease basis but which, when regarded in accumulation, is having a significant and unacceptable impact.[108]

4.113 The TSGA provided the committee with information on the amount of marine debris collected in 2012–13 and 2013–14. This is at table 4.1.

Table 4.1: Marine debris clean-up

	Volume of rubbish collected (m^3)	% attributable to salmonid farms	Labour hours
2012–13	50.4	67	479
2013–14	60.5	72	626

Source: Tasmanian Salmonid Growers Association, Submission 33, p. 18.

4.114 The TSGA noted that the industry's clean-up activities also removed debris which could not be attributed to fish farming operations and this accounted for approximately 15m^3 of the debris collected each year.[109] Tassal's *Sustainability Report 2014* also commented on the amount of debris collected and stated that, in relation to its outcomes for debris removed:

> The increase in the percentage of rubbish attributable to salmon farms is the result of a focused effort by Tassal staff to clean up historic debris in the upper reaches of Macquarie Harbour, an area which has not previously been undertaken for clean up.[110]

Industry response and engagement

4.115 The TSGA commented that each company has implemented a waste mitigation strategy in order to reduce the amount of debris that enters the marine environment from farming operations. In particular, the companies have focused mitigation strategies on reducing rope and feed pipe debris.

4.116 The TSGA went on to state that the industry has a 'rapid response' philosophy when it is notified of debris irrespective of its origin. Broadly, strategic objectives are to:

---

107 Tasmanian Abalone Council, *Submission 74*, Attachment 3, p. 10; Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 2.

108 Environment Tasmania, *Submission 93*, p. 16.

109 Tasmanian Salmonid Growers Association, *Submission 33*, p. 18.

110 Tassal Group Limited, *Sustainability Report 2014*, p. 26 http://www.tassal.com.au/wp-content/uploads/2015/04/Tassal-Sustainability-Report-2014.pdf (accessed 24 July 2015)

- develop clear, rapid response plans when marine debris is reported in the vicinity of fish farms;
- achieve zero material waste entering the environment;
- establish procedures and operating mechanisms that focus on managing the loss of farm materials into the marine environment;
- establish chains of responsibility at the farm level;
- establish monitoring procedures;
- conduct regular marine debris clean-up efforts in the vicinity of fish farms; and
- identify equipment to drive accountability.[111]

4.117 In relation to the objective of zero material waste entering the environment, Dr Main commented it was part of the industry's continuous improvement program. The industry was using information gained during clean-up operations to enable it to more quickly respond to debris issues and to achieve the target of zero marine debris.[112] The companies also manage marine debris through a variety of community partnerships.

4.118 Tassal, in its *Sustainability Report 2014*, commented that 'marine debris has been highlighted by stakeholder materiality assessments as one of the most important issues for the salmon farming industry to solve'. The report went on to comment that the 'Adopt a Shoreline' approach was continuing and 'modest results from the implementation of farm level waste mitigation plans were being seen'. Tassal indicated that while clean-ups will continue to be undertaken, the company would focus on improving site ownership of the debris issue by holding farm staff workshops and increasing staff engagement in community-based marine debris clean-ups.[113]

4.119 Huon Aquaculture's marine debris policy has been developed to reduce the impact of activities on the marine environment. Huon Aquaculture undertakes collections of marine debris at the request of the community, regardless of source and is actively reducing marine debris from entering the waterway.[114] Huon Aquaculture also provides information on its clean-up locations on the Huon River and D'Entrecasteaux Channel on its Sustainability Dashboard.[115]

---

111 Tasmanian Salmonid Growers Association, *Submission 33*, p. 17.

112 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 34.

113 Tassal Group Limited, *Sustainability Report 2014*, p. 26 http://www.tassal.com.au/wp-content/uploads/2015/04/Tassal-Sustainability-Report-2014.pdf (accessed 24 July 2015).

114 Huon Aquaculture, 'Managing Marine Debris' https://www.huonaqua.com.au/sustainability/marine-environment/managing-marine-debris/

115 Huon Aquaculture, *Sustainability Dashboard*, http://dashboard.huonaqua.com.au/

4.120 BirdLife Tasmania also noted its involvement with Tassal in relation to marine debris. The industry undertakes to retrieve marine debris from aquaculture operations from nearby foreshores in the D'Entrecasteaux Channel. Birdlife noted that these collections can potentially impact on nesting birds if the collection is undertaken during the breeding season (October to March, inclusive). As a result of BirdLife Tasmania's presentation to Tassal staff, and ongoing interactions with Tassal management, clean-up and debris retrieval operations were shifted to winter months, which is the non-breeding season for resident shorebirds.[116]

4.121 Similarly, Huon Aquaculture addresses marine debris issues through toolbox meetings, training and internal communications to educate all staff on marine debris, including identifying all types of rope used across its marine operations. The TSGA noted that Huon Aquaculture identifies and records all marine debris attributable to its operations and other sources including household waste and other waterway user waste on clean-ups conducted both internally and through community partnerships.[117]

4.122 The Tasmanian Regional NRM Organisations also commented on its ongoing engagement with industry across a range of issues including on-ground marine debris clean-up and control projects.[118]

4.123 However, while acknowledging that individual companies conduct clean-ups, Environment Tasmania stated that these were only on an irregular basis and that marine debris 'is a persistent problem that appears to require stronger enforcement'.[119] Ms Sarah Lowe also argued that further funds are need for community-based clean-ups and went on to state:

> Policy regards marine debris at both Tassal and Huon Aquaculture is to be commended with dedicated staff at the coalface often endeavouring to appease angry community members lambasting marine debris from farms. While both companies' websites promote community consultation it is often difficult to contact community engagement officers who have a range of priorities to attend to.[120]

4.124 The Tasmanian Conservation Trust pointed to the litter washed ashore in the vicinity of fish farms, particularly the southern shore of Macquarie Harbour. The Trust concluded that fin-fish farms should make a greater effort to prevent litter from leaving lease areas and cleaning up their litter on foreshores.[121]

---

116 BirdLife Tasmania, *Submission 15*, p. 3.

117 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 21.

118 Tasmanian Regional NRM Organisations, *Submission 3*, p. 1.

119 Environment Tasmania, *Submission 93*, p. 16.

120 Ms Sarah Lowe, *Submission 68*, p. 3.

121 Tasmanian Conservation Trust, *Submission 92*, p. 4.

Committee comment

4.125 Marine debris is a significant problem in all Australian marine waterways. While the fin-fish aquaculture industry already undertakes activities to reduce the amount of debris entering Tasmanian waterways, the committee encourages the continued exploration of new ways to decrease marine debris attributable to aquaculture. In particular, the committee considers colour tagging of each company's ropes and nets would enable identification of the source of marine debris and provide information to aid debris reduction efforts.

4.126 The committee notes that much marine debris is not attributable to the fin-fish industry and that the industry assists communities through a number of programs to undertake clean-up activities. However, further expansion of the industry's support for community-based clean-up activities would greatly benefit the marine and coastal environment as well as contribute to the building of goodwill in local communities.

Chapter 5

Environmental planning and regulation of the fin-fish industry

5.1 The environmental planning and regulatory regime for the fin-fish industry is outlined in chapter 2 of this report. This chapter examines this regime in greater detail by addressing issues related to the adequacy of planning and regulation; independence of decision making; the role of the Marine Farming Planning Review Panel (the Panel); and lack of integration of the planning system.

Adequacy of the environmental planning and regulation

5.2 Mr Chris Dockray, Chairman, TSGA, highlighted the importance of the regulatory system for the fish-farming industry. He stated:

> …an efficient, predictable and accountable regulatory system is required in the industry; not only for public confidence, but also for investor confidence. We consider that the regulatory framework is adequate and sufficient…we believe that we have a sound and transparent working relationship with the government and our regulators.[1]

5.3 Industry stakeholders indicated that they are required to comply with the provisions of nearly 70 Commonwealth and Tasmanian Acts and 672 regulations. The Tasmanian Seafood Industry Council commented that the regulatory framework for fin-fish aquaculture in Tasmania is 'one of the most comprehensive and stringent frameworks developed globally'.[2] The Council added:

> At a workshop on environmental planning held in conjunction with the World Aquaculture Conference Adelaide 2014 there was acknowledgement from all participants that the system developed in Tasmania could be used as a blueprint in other jurisdictions.[3]

5.4 In addition to statutory obligations, the TSGA noted the industry participates in, or is directed by, a number of Commonwealth and state policies and voluntary programs such as the Tasmanian Salmonid Health Surveillance Program.[4]

5.5 The committee was advised that, according to industry calculations, the cost of compliance with the regulatory regime is high: $0.04/kg or $1,720,000 per annum and increasing. The TSGA added:

---

1 Mr Chris Dockray, Chairman, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 27.

2 Tasmanian Seafood Industry Council, *Submission 19*, p. 5.

3 Tasmanian Seafood Industry Council, *Submission 19*, p. 5.

4 Tasmanian Salmonid Growers Association, *Submission 33*, p. 25; see also Appendix 3, p. 46.

> Industry estimates that costs have increased 100 per cent in the past five years due to increased monitoring, additional staff, independent certification and operational changes to meet certification requirements.[5]

5.6 However, Ms Jessica Feehely, EDO Tasmania, argued that it is important to consider the effectiveness of the current regulation. It was noted that the current regulatory framework was established at the commencement of the industry. Now that it is a well-established and expanding industry, the EDO Tasmania argued that it 'is important that the laws are reviewed to ensure that the impacts of these expansions are properly understood and properly managed'.[6]

5.7 Ms Feehely commented that there was room for improvement in relation to public participation, independence of decision making and transparency.[7] These issues are addressed below.

Independence of decision making

5.8 Some submitters argued that that there is a lack of regulatory independence within the Tasmanian regulatory framework including the role of the Environment Protection Authority (EPA). For example, EDO Tasmania commented on the role of the Department of Primary Industries, Parks, Water and Environment (DPIPWE):

> In Tasmania, the Marine Farming Branch within DPIPWE is responsible both for promoting and regulating the marine farming industry; potentially conflicting roles.[8]

5.9 Mr Feehely, EDO Tasmania, added:

> So the objectives which [DPIPWE] are working towards are in conflict potentially because they are promoting an industry and are also having to take action to potentially constrain the industry in the event that there are inappropriate impacts. In other countries, that potential conflict is managed by separating out the government agency responsible for management and promotion and the government agency responsible for monitoring and compliance.[9]

5.10 To illustrate its concerns about conflicting management priorities within DPIPWE, EDO Tasmania pointed to the expansion of marine farming in Macquarie Harbour. In this instance, DPIPWE was listed as the proponent for the action in the

---

5 Tasmanian Salmonid Growers Association, *Submission 33*, p. 30.

6 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, pp 52, 57.

7 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 57.

8 EDO Tasmania, *Submission 70*, p. 6.

9 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 53.

referral to the Commonwealth Environment Minister although the expansion was being undertaken by private companies. EDO Tasmania stated:

> The close relationship between the three companies and the regulator, a history of under-regulation and enforcement…and explicit support expressed by DPIPWE for aquaculture projects all affect public trust in the rigour of the regulatory framework.[10]

5.11 Ms Feehely argued that, while there is a role for government in assisting and supporting the industry, the same agency should not be responsible for monitoring and for compliance of the industry. Ms Feehely went on to state that these activities should be undertaken by the EPA.[11] Ms Feehely added that:

> The Environment Protection Authority has the role in relation to other activities of providing that monitoring and compliance, and we would see that as an appropriate role for the EPA to take on monitoring and compliance in relation to the aquaculture industry.[12]

5.12 The regulatory independence in the current planning regime was supported by Mr Julian Harrington, Tasmanian Seafood Industry Council. In this regard, Mr Harrington commented on the rock lobster fishery and stated that:

> An adaptive management structure does not mean it is always about expansion. It is the government taking the responsible approach when scientific information is put forward. In the case of the rock lobster fishery, through various means—below average recruitment, urchin issues on the east coast—stocks declined. The government and industry pushed for a retraction rather than an expansion of the quota to ensure long-term sustainability.[13]

5.13 Mr Harrington concluded that 'I am sure the government would take the same approach with the salmon industry, should there be sufficient evidence to suggest there is detrimental impact to other marine resources or the broader marine environment'.[14]

5.14 When questioned about possible conflict of interest when the Tasmanian Government is a strong proponent for growth of the industry and DPIPWE is the regulator, Dr John Whittington, Secretary, DPIPWE, commented that:

---

10 EDO Tasmania, *Submission 70*, p. 6.

11 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 53; see also EDO Tasmania, *Submission 70*, p. 6.

12 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 53.

13 Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard*, 15 July 2015, p. 48.

14 Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard*, 15 July 2015, p. 48.

> …the government is very supportive of growth in the salmonid industry. As a regulator, I am quite confident that we are regulating appropriately in accordance with the legislation.[15]

Marine Farming Planning Review Panel

5.15 Submitters commented on recent changes to legislation in relation to the Panel, representation on the Panel and transparency of processes.

Change to decision making arrangements

5.16 For some submitters the change made to the role of the Panel in decision making was a major concern. Until November 2011, the Panel could determine that unacceptable proposals for fin-fish marine farming operations could not proceed. However, amendment of the *Marine Farming Planning Act 1995* (MFP Act) resulted in the Panel being only able to make a recommendation to the Minister for Primary Industries and Water.

5.17 Mr Jon Bryan, Tasmanian Conservation Trust, described the amendment as removing 'even the requirement for the already inadequate planning process to approve developments'.[16]

5.18 EDO Tasmania added that the minister would have the final decision in relation to a proposal and could also make any changes to a proposal without further consultation. EDO Tasmania did not support this approach and stated:

> …there can be no good reason to allow proposed marine farming activities where the independent, scientific expert Panel has determined that the amendments are not sustainable and recommended refusal. Decisions made by the Panel to refuse a proposal should be final (subject to a right of review…).[17]

5.19 Allowing the minister to overrule any recommendations made by the Panel, has led, according to the Australian Maritime Conservation Society, to a 'perception that industry expansion is of greater importance than ensuring the environment that supports it is healthy'.[18]

5.20 However, Mr Julian Harrington, Tasmanian Seafood Industry Council, did not agree with these views and stated:

---

15 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, pp 2–3.

16 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 2; see also Australian Marine Conservation Society, *Submission 9*, p. 5.

17 EDO Tasmania, *Submission 70*, p. 8.

18 Australian Marine Conservation Society, *Submission 9*, p. 5.

> The seafood industry supports the system in place to ensure the sustainability of our seafood industry on the whole. The system in place at the moment takes into account a whole range of information and input from a whole range of stakeholders. So it is not necessarily the minister making a final decision. It is the minister utilising input from a whole range of stakeholders.[19]

5.21 In addition, the committee notes that while the minister is not required to adopt the Panel's recommendation, the Minister must provide a statement of reasons to the Tasmanian Parliament for any decision that is contrary to the Panel's advice.[20]

Transparency and consultation

5.22 The Tasmanian Conservation Trust commented on issues related to transparency and consultation during Panel reviews. The Trust stated that there is no requirement that the operations of the Panel are open to public scrutiny and there is no mechanism that ensures that there is genuine public input into the planning process. In addition, it was argued that 'there is no requirement for the Marine Farming Planning Review Panel to take into account public submissions and it does not have to justify its decisions'.[21]

5.23 Mr Jon Bryan, Tasmanian Conservation Trust, commented further on the consideration of community concerns by the Panel. He stated that the Panel:

> ...is purported to be an expertise based committee that can represent the interests of a wide range of members of the community. Instead, it has repeatedly failed to take into account genuine concerns about impacts including things such as visual and noise pollution, nutrients and other pollutants going into the water and loss of amenity. The panel has repeatedly dismissed views of local residents and communities as well as recreational users such as fishers and sailors. Many within the community have raised concerns about this with the government. I have been a member of two government endorsed peak recreational fishing groups that have pointed out the lack of meaningful representation and requested representation on the panel. Their requests were refused by the government.[22]

---

19 Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard*, 15 July 2015, p. 48.

20 Hobart Community Legal Service, 'Marine Farming', *Tasmanian Law Handbook* http://www.hobartlegal.org.au/tasmanian-law-handbook/community-and-environment/environment/industry-codes-practice/marine-farming (accessed 7 August 2015).

21 Tasmanian Conservation Trust, *Submission 92*, pp 7–8; Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 1.

22 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 2.

5.24 In relation to the lack of a requirement to explain its decisions, Mr Bryan noted that the Panel plans for the use of a public resource and thus 'it is planning for impacts on communities and individuals—impacts that are very significant for those communities and individuals—and it should be open to public scrutiny, but it is not'.[23]

5.25 Mr Bryan concluded that this is a structural issue with the planning process and went on to state that 'to give the aquaculture industry credit, I think that they have been more proactive and more sensitive to community needs and concerns than the government in recent years, but that is really an indictment on the government process'.[24]

5.26 Dr Whittington responded to concerns about public consultation and noted that the systems set up under the MFP Act provide for public input into planning decisions. He added that, in developing of new marine farm planning areas, 'there is a very public process' and environmental impact statements are publicly available. In addition, there is opportunity for the community to put their views to the Panel on those developments. Dr Whittington commented:

> So there is a substantial process of community engagement and involvement around the development of new waters.[25]

5.27 Mr Tony Thomas, DPIPWE, in reply to questioning regarding community concerns about marine farming proposals being taken into account by the Panel, commented 'that is their role—it is their job to try to balance'.[26]

Panel representation

5.28 The Panel consists of eight persons appointed by the Governor. The MFP Act sets out the disciplines for each member:

> (a) one is the chairperson of the Panel; and
>
> (b) one is a person nominated by the chairperson of the Tasmanian Planning Commission with ability and experience in planning issues; and
>
> (c) one is the Director, Environment Protection Authority; and
>
> (d) one is a person with ability in marine resource management; and

---

23 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, pp 5–6.

24 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 10; see also Ms Rebecca Hubbard, Marine Coordinator, Environment Tasmania, *Committee Hansard*, 16 July 2015, p. 10.

25 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 8.

26 Mr Tony Thomas, Principal Management and Planning Officer, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 9.

(e) one is a person with ability to assess boating, recreational and navigational issues; and

(f) one is a person with experience in marine farming; and

(fa) one is a person with expertise in local government issues; and

(g) one is a person nominated by the Minister.[27]

5.29 EDO Tasmania commented that while members could have relevant scientific expertise, there is no explicit requirement for the Panel to include a member with qualifications in relation to marine ecology, hydrology, marine sediments or conservation management. Similarly, while a community representative could be the person nominated by the Minister, there is also no capacity for community concerns to be specifically represented.[28]

5.30 EDO Tasmania recommended that amendments be made to the MFP Act to require that the Panel include a member with qualifications and expertise in relation to marine ecology and hydrology and a member representing community issues.[29]

Lack of integration of the planning process

5.31 Some submissions focused on the lack of integration in Tasmania of marine farm planning and other planning regimes.[30] For example, EDO Tasmania commented that the MFP Act seeks to achieve well-planned sustainable development of marine farming activities having regard to the need to 'take account of land uses' as well as other matters.[31] However, EDO Tasmania argued that:

> …the separation of marine farming planning from coastal and land use planning frameworks can make it difficult to balance these objectives. In practice, DPIPWE, the agency responsible for both planning and regulation of marine farming, has a clear interest in favouring development of marine leases over other uses.[32]

5.32 EDO Tasmania went on to comment that, although local council planning authorities have jurisdiction over land based operations, they do not have jurisdiction over marine farming planning schemes. As a result, marine farming activities fall outside the Tasmanian *Land Use Planning and Approvals Act 1993* (LUPAA). However, the minister can require a planning scheme to be altered to ensure that land

27 MFP Act, s. 2.

28 MFP Act, s. 2(d).

29 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 55.

30 Environment Tasmania, *Submission 92*, p. 3.

31 MFP Act, s. 4(1).

32 EDO Tasmania, *Submission 70*, p. 3.

based activities do not affect marine farming. EDO Tasmania stated that this 'provides an unfair priority for marine farming activities'.[33]

5.33 EDO Tasmania strongly advocated for the inclusion of marine farming within the standard land use planning process under the LUPAA, with responsibility for strategic planning, assessment and approval of development applications and enforcement of permit conditions falling to local government. In addition, it argued that planning schemes dealing with marine farming should be reviewed by the Tasmanian Planning Commission (TPC).[34] EDO Tasmania also pointed to regulatory regimes in Scotland and New Zealand where the integrated system of planning covers both traditional development and land-use as well as marine and coastal uses.[35] An overview of aquaculture regulation in overseas jurisdictions is provided in Appendix 3 of this report.

5.34 Similarly, the Tasmanian Conservation Trust commented:

> Planning for aquaculture is not properly integrated into a more general system of planning for the marine environment. There should be a Tasmanian Coastal Policy that deals with the aquaculture industry in a way that protects the values associated with Tasmania's coastal environment. It appears that the even council planning does not necessarily limit aquaculture industry activities on land, and that the water based components are not limited at all.[36]

5.35 Mr Bryan, Tasmanian Conservation Trust, went on to comment that bringing the marine planning process under the LUPAA would 'provide genuine community input, public scrutiny, transparency of the process and a reasonable appeals process that will actually protect people's rights and interests'.[37]

5.36 Similarly, the Australian Marine Conservation Society noted concerns about the lack of integration of marine planning activities and stated:

> In effect, marine activities are given primacy over terrestrial ones, with the effect that there is no holistic process that considers the impact of aquaculture at an ecosystem level. Given the inshore nature of aquaculture operations, the location of hatchery activities on land and the inter-connectedness of land and sea, this separatist approach prevents a strategic planning process that incorporates both terrestrial and marine ecosystems.[38]

---

33 EDO Tasmania, *Submission 70*, p. 4.

34 EDO Tasmania, *Submission 70*, p. 4.

35 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 53; see also EDO Tasmania, *Submission 70*, p. 5.

36 Tasmanian Conservation Trust, *Submission 92*, p. 9.

37 Mr Jon Bryan, Marine Campaigner, Tasmanian Conservation Trust, *Committee Hansard*, 16 July 2015, p. 2.

38 Australian Marine Conservation Society, *Submission 9*, p. 5.

5.37 The Society noted EDO Tasmania's suggestion that marine planning come under the LUPAA and that the TPC oversight aquaculture development plans. It stated that this 'would be an appropriate way to ensure a strategic, whole of ecosystem approach to taken to marine farm planning'.[39]

5.38 Local government also commented on the lack of integration in the land planning scheme. Kingborough Council stated that the Tasmanian Government does not adequately involve local government in critical decision-making regarding lease site activities, intensifications, expansions and remediation.[40] The Mayor of Kingborough Council, Mr Stephen Wass, commented:

> I think the biggest issue in the past has been that, when a licence has been provided to an area, the state government has provided that licence and we have no issues with that and the procedures followed, but as far as local government goes, because it is in a water area—and in our case that was predominantly in the channel area—local government is not involved. Local government is involved by finding out that that operation is going to take place. The only time local government is involved is when there is an application in relation to the land based activity requirements.[41]

5.39 A further issue raised by the Kingborough Council was that, while councils are not involved in marine planning processes, councils are the first place that members of the community contact when problems arise. Mr Gary Arnold, Kingborough Council, stated:

> …the reality is that whilst we have no say in the approvals, other than the opportunity to put a submission in, which we have done in the past, once the leases are approved we generally are, for want of a better term, the organisation that the community comes to with any concerns, whether they be about noise, visual intrusion into their amenity, their water views et cetera[42]

5.40 Mr Arnold suggested that one way of addressing local government concerns would be for the Panel to be required to hold a hearing with the local government or municipal area before any approval is given.[43]

5.41 Dr Whittington, DPIPWE, responded to the suggestion that marine farming planning should come within the LUPAA. Dr Whittington commented that he did not consider that a change was warranted and stated:

---

39 Australian Marine Conservation Society, *Submission 9*, p. 5.

40 Kingborough Council, *Submission 1*, p. 1.

41 Mr Stephen Wass, Mayor, Kingborough Council, *Committee Hansard*, 15 July 2015, p. 15.

42 Mr Gary Arnold, General Manager, Kingborough Council, *Committee Hansard*, 15 July 2015, p. 16.

43 Mr Gary Arnold, General Manager, Kingborough Council, *Committee Hansard*, 15 July 2015, p. 16.

> The Tasmanian regulatory system is based upon the Resource Management and Planning System, the RMPS. The Marine Farming Planning Act sits inside that umbrella of the RMPS, as does the Tasmanian Planning Commission. We believe that the regulatory environment that is set up under that act is…global best practice and I do not see any reason to change that. The systems that are set up under the Marine Farming Planning Act provide for public input into planning decisions. They provide for expert advice into planning decisions and provide advice to the relevant minister to make decisions. I think they are all the elements of a good planning system and are consistent with the RMPS, of which the [Tasmanian Planning Commission] is a part.[44]

Merit review mechanisms

5.42 Of particular concern to some submitters was the lack of merit review or appeal mechanisms within the marine farming planning process. The DPIPWE confirmed that there is no appeal process. Mr Thomas, DPIPWE, stated:

> Once the minister makes a decision on a development proposal—be it a new plan or an amendment to a plan—there are no appeal provisions.[45]

5.43 In contrast, EDO Tasmania noted that for most significant land use and development decisions under the LUPAA, any person who made a representation can appeal to the Resource Management and Planning Appeal Tribunal. This means that the tribunal effectively re-hears the evidence and makes its own determination as to whether the development proposal should proceed. However, there is no similar right to appeal against a decision under the MFP Act to amend a marine farming development plan to facilitate an aquaculture proposal.[46]

5.44 EDO Tasmania stated that a perceived lack of independence in the decision making processes under the MFP Act makes it important that a right to appeal exist. Specifically, it argued that there should be an appeal process that is open to any person who made a representation in respect to the initial proposal, including affected residents, non-government organisations, other industries, tourism operators and the local government.[47]

---

44 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 8.

45 Mr Tony Thomas, Principal Management and Planning Officer, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 9.

46 EDO Tasmania, *Submission 70*, p. 11.

47 EDO Tasmania, *Submission 70*, p. 11.

5.45 EDO Tasmania also commented that in jurisdictions where there is an integrated planning scheme it is standard practice for there to be opportunities to appeal against decisions.[48]

5.46 Ms Feehely added that the opportunity for third-party review of decisions is the best way to deal with any issue around conflict of interest.[49] The Australian Marine Conservation Society also stated that, as there is no right of appeal to challenge the minister's decision, 'there are limited opportunities for community engagement and government accountability is zero'.[50]

5.47 While there is no merit review mechanism in the MFP Act, judicial review of administrative decisions by the Tasmanian Supreme Court is provided through the *Judicial Review Act 2000*. A judicial review is concerned only with whether the decision was lawfully made.[51] A merits review enables a review of all aspects of the challenged decision.

Adequacy of resourcing

5.48 A further issue raised by Environment Tasmania was the adequacy of resourcing of the regulator. Environment Tasmania noted that the industry aims to double production over the next 15 years. However, Environment Tasmania argued that the regulator is unable to keep up with expansion plans, unable to adequately assess monitoring data, unable to meet request for information from the public, and is 'failing to ensure fair resource sharing between the aquaculture industry, and other industries and the community for the long-term'.[52]

5.49 The DPIPWE Annual Report 2014 provides information on the department's groups and staffing levels. The aquaculture industry is supported by staff across a number of groups. Two of the main groups are Output Group 2 and Output Group 7. Output Group 2–Primary Industries comprises two areas: AgiGrowth Tasmania (which works with the agriculture industry to advance its prosperity and sustainability) and Marine Resources (which supports the fisheries and seafood sector). As at 30 June 2014, 58.25 Full Time Equivalent (FTE) staff were employed in Output Group 2, an increase from 48.62 FTE as 30 June 2013. Output Group 7 – Environment Protection and Analytical Services includes staff supporting the EPA. As

48 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 54.

49 Ms Jessica Feehely, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 55.

50 Australian Marine Conservation Society, *Submission 9*, p. 5.

51 *Judicial Review Act 2000*, s. 17, provides the grounds for review; see Tasmanian Salmonid Growers Association, *Response to submissions*, p. 24.

52 Environment Tasmania, *Submission 93*, pp 13–14.

at 30 June 2014, there were 121.32 FTE, an increase from 120.18 as at 30 June 2013.[53]

Committee comment

5.50 The committee has considered the evidence provided concerning environmental planning and regulation of the fin-fish industry. The committee acknowledges that regulation of the industry is a Tasmanian state responsibility. In addition, the committee does not consider that there is clear evidence that the planning regime is flawed.

5.51 Nonetheless, the committee has noted the comments about the composition of the Marine Farming Planning Review Panel. While marine scientists have been appointed to the Panel, in particular Professor Colin Buxton and Dr Lois Koehnken, the committee considers that it is highly desirable that the Government ensure that the Panel always has at least one member with specific qualifications related to the marine environment.

5.52 The committee also believes that the Tasmanian Government should give consideration to identifying additional means for expanding community involvement in the planning process. The committee notes that the Panel may hold public hearings but there is no statutory obligation to do so in the Marine Farming Planning Act. The committee is of the view that consideration should be given to amending the Act to require the Marine Farming Planning Review Panel to hold public hearings in relation to a draft plan or an amendment to a plan. Not only would public hearings allow for community participation, they would also provide an opportunity for local councils to engage in the planning process and assist the industry to explain its proposals in a public forum.

Recommendation 2

5.53 The committee recommends that the Tasmanian Government give consideration to amending the *Marine Farming Planning Act 1995* to provide a statutory obligation for the Marine Farming Planning Review Panel to hold public hearings.

5.54 The committee has noted suggestions that the fin-fish aquaculture planning process be brought under the *Land Use Planning and Approvals Act 1993* to promote integration with other planning regimes. However, the committee notes that the membership of the Marine Farming Planning Review Panel includes a person nominated by the chairperson of the Tasmanian Planning Commission with ability and experience in planning issues and a person with expertise in local government issues. The committee considers that the inclusion of these members on the Panel provides oversight of local government concerns during the planning process.

---

53 Department of Primary Industries, Parks, Water and Environment, *Annual Report 2014*, pp 11–15, 87, 154.

5.55 The Tasmanian Government relies on an adaptive management approach to ensure effective and timely responses to the evolving issues within the fin-fish industry. The committee supports such an approach. However, the committee considers that for an adaptive management approach to be fully effective, adequate resourcing of relevant government agencies is necessary.

5.56 The principal government agency responsible for the primary production sector in Tasmania is the Department of Primary Industries, Parks, Water and Environment. The department also includes the Environment Protection Authority. The committee notes that department's responsibilities are extensive. In addition, not only is the fin-fish aquaculture industry planning significant expansion of its operations over the coming years, the dairy industry is currently experiencing substantial growth.

5.57 The department's Annual Report 2014 indicated that staffing levels have increased in relevant monitoring and compliance areas. However, the committee considers that the Tasmanian Government should continue to ensure that the department has a sufficient number of staff, and staff with appropriate skills, to effectively manage all primary industries in Tasmania, particularly at a time when some industries are experience significant growth.

Recommendation 3

5.58 The committee recommends that the Tasmania Government ensure that the Department of Primary Industries, Parks, Water and Environment is provided with sufficient resources to undertake planning, monitoring and compliance of the primary industry sector.

Chapter 6

Interaction of state and federal laws and regulations

6.1 While there are a number of areas where Commonwealth laws apply to the Tasmanian aquaculture industry, submitters focused on the interaction of state and Commonwealth laws in relation to the expansion of farming operations in Macquarie Harbour. This chapter provides an overview of relevant Commonwealth legislation before addressing the issues related to Macquarie Harbour.

Commonwealth regulation

6.2 Commonwealth regulation is applicable to the Tasmanian fin-fish aquaculture industry in three areas:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- water quality standards;
- marine biosecurity; and
- agriculture and veterinary chemicals.

Environment Protection and Biodiversity Conservation Act 1999

6.3 The Department of the Environment plays a limited role in regulatory activities affecting the aquaculture industry, as the industry is primarily regulated under relevant state and territory legislation. However, projects require approval under the EPBC Act if they are likely to have a significant impact on any matter of national environmental significance (as defined by the Act). The nine matters of national environmental significance protected under the EPBC Act are:

- world heritage properties;
- national heritage places;
- wetlands of international importance (listed under the Ramsar Convention);
- listed threatened species and ecological communities;
- migratory species protected under international agreements;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- nuclear actions (including uranium mines); and
- water resources, in relation to coal seam gas and large coal mine developments.[1]

---

1 Department of the Environment, *What is protected under the EPBC Act?*, http://www.environment.gov.au/epbc/what-is-protected (accessed 21 July 2015)

6.4 Actions that may have a significant impact on a matter of national environmental significance must be referred to the minister. The minister may decide that an action:

- is a controlled action because it is likely to have a significant impact;
- is not a controlled action if undertaken in a manner specified; or
- is not a controlled action and therefore does not require approval.[2]

One-stop shop policy in Tasmania

6.5 The Department of the Environment submitted that the Commonwealth Government is committed to the development of the one-stop shop policy to create a single environmental assessment and approval process for nationally protected matters. The one-stop shop policy will see the accreditation of state and territory approval processes to meet environmental standards required by the Commonwealth. The Commonwealth and Tasmanian Governments signed a new assessment bilateral agreement on 22 October 2014 and a draft approval bilateral agreement was released for public comment in August 2014.

6.6 The Department of the Environment commented that 'the reform may not result in accreditation of all Tasmanian planning processes immediately, as some of these processes do not currently meet the standards required by the EPBC Act'.[3]

6.7 In relation to the *Living Marine Resources Management Act 1995* (Tas) and the *Marine Farming Planning Act 1995* (Tas), the Department of the Environment stated that the Acts:

> …are currently not accredited under the existing assessment bilateral agreement and are not proposed to be accredited under the draft approval bilateral agreement released for comment in August 2014. In the absence of either an assessment or approval bilateral agreement that accredits the relevant Tasmanian process, the Commonwealth will continue to have an assessment and approval role in relation to any aquaculture projects likely to have a significant impact on nationally protected matters.[4]

Water quality

6.8 While the primary responsibility for water quality management and water quality data lies with the state and territory governments, the Commonwealth engages with the jurisdictions to improve water quality in waterways, particularly through the National Water Quality Management Strategy (NWQMS). The NWQMS aims to protect water resources, by improving water quality while supporting the businesses,

2 EPBC Act, s.75–77A.

3 Department of the Environment, *Submission 40*, p. 3.

4 Department of the Environment, *Submission 40*, p. 3.

industry, environment and communities that depend on water for their continued development.

6.9 The Department of the Environment added that the Strategy is the principal policy that provides guidance on the environmental suitability of waste discharges to the receiving environment and applies in all states and territories.[5] Under the NWQMS, the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (2000) provides material on a range of matters including aquaculture and human consumers of aquatic foods.[6] The guidelines are currently under review.

6.10 Through the application of the NWQMS, the Commonwealth is working in collaboration with the states and territories to develop Water Quality Improvement Plans (WQIP) to reduce pollution being released into aquatic ecosystems with high ecological, social and/or recreational values. WQIPs seek to deliver significant reductions in the discharge of pollutants to agreed hotspots. A WQIP provides an ecosystem based approach to integrated water cycle management, supported by science. Currently, the Derwent Estuary is a listed Water Quality Hotspot.[7]

Marine biosecurity

6.11 Exotic marine species can enter Australian waterways through biofouling (the accumulation of pests attached to vessel hulls) and ballast water (water carried in vessels to maintain their suability).

6.12 In relation to biofouling, the Commonwealth Department of Agriculture noted that, in November 2013, the *National biofouling management guidelines for the aquaculture industry* were published. The guidelines were reviewed following the first 12 months of operation. The Department of Agriculture commented that the aquaculture industry had advised the review that anti-fouling paints are no longer used on moveable aquaculture structures and biofouling is generally acquired from the local area. On this basis:

> …it was proposed and agreed by relevant jurisdictions and agencies that moveable aquaculture structures (including those used in finfish aquaculture operations in Tasmania) be removed from the guidelines.[8]

6.13 The aquaculture industry is also subject to Commonwealth quarantine legislation in relation to biosecurity risks associated with imported commodities such as feed for fish, farming equipment, live broodstock and genetic material. The Department of Agriculture noted that 'Commonwealth quarantine legislation operates

---

5 Department of the Environment, *Submission 40*, p. 3.

6 Department of the Environment, *Submission 40*, p. 3.

7 Department of the Environment, 'Water Quality Improvement Plans' http://www.environment.gov.au/water/quality/improvement (accessed 10 August 2015).

8 Department of Agriculture, *Submission 10*, p. 5.

concurrently with state and territory quarantine legislation, including the management arrangements in Tasmania'.[9]

Chemical use

6.14 The Australian Pesticides and Veterinary Medicines Authority (APVMA) regulates the use of agriculture and veterinary (agvet) chemicals by Australian aquaculture industries. Chemicals used by the aquaculture industry include antibiotics, vaccines, hormones to induce spawning and for production of female stock, anaesthetics and biocides to control fouling on equipment.

6.15 The APVMA regulates chemicals up to, and including, the point of retail sale and is based on 'rigorous independent scientific assessments of the potential risks the chemicals pose to the environment, as well as to human health, occupational health and safety, and trade in products associated with the use of these chemicals'.[10]

6.16 The states and territories are responsible for regulating the use of agvet chemicals after the point of retail sale through control-of-use legislation. Residue monitoring and environmental management issues relating to the use of agvet chemicals are also primarily the responsibility of state and territory governments.

6.17 As part of the Commonwealth Government's commitment to decrease the regulatory burden on producers, the Department of Agriculture stated that it continued to consult with the aquaculture industry to improve agvet chemical regulation and access.[11]

Expansion of farming in Macquarie Harbour and application of the EPBC Act

6.18 The committee received evidence regarding the expansion in Macquarie Harbour in relation to threatened species such as the spotted handfish and Maugean skate, the possible impact on the Tasmanian Wilderness World Heritage Area and the requirements contained in the Commonwealth referral decision which was made under the EPBC Act.[12] Matters related to threatened and endangered species have been canvassed in chapter 4.

Expansion of operations in Macquarie Harbour

6.19 Aquaculture has been conducted in Macquarie Harbour for more than 20 years. In 2010, Tassal, Huon Aquaculture and Petuna began exploring the potential for expansion in the Macquarie Harbour region. A draft amendment to the Macquarie

9 Department of Agriculture, *Submission 10*, p. 5.

10 Department of Agriculture, *Submission 10*, p. 6.

11 Department of Agriculture, *Submission 10*, p. 7.

12 Australian Marine Conservation Society, *Submission 9*, p. 6.

Harbour Marine Farming Development Plan (MHMFDP) was submitted to the Marine Farming Planning Review Panel for assessment.

6.20 The Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE) commented that proponents of marine farming developments are notified by DPIPWE of the prescriptions of the EPBC Act when development proposals are presented to the Department and when marine farming leases are granted. DPIPWE commented that 'it should be noted that a marine farming lease must be granted to a proponent before any action can be undertaken and hence any referral made to the Minister administering the [EPBC Act]'.[13]

6.21 Approval was given in May 2012 for the industry to increase the number of leases in the Harbour from 2 per cent to 3.3 per cent (924 hectares) of the total water space.[14] The TSGA stated that the percentage of the harbour taken up by the industry is less than 3.3 per cent of the harbour with the actual fish pens taking up 20 hectares.[15] The TSGA noted that there are no farms in the World Heritage Area in Macquarie Harbour. Rather, the World Heritage Area is at the top of the Macquarie Harbour body of water, upstream of salmon farming and is protected from adverse environmental impacts of farming by the environmental limits set by DPIPWE within the compliance zone for farming.[16]

Application of the EPBC Act

6.22 The expansion of marine farming at Macquarie Harbour was referred to the Commonwealth in 2012 on behalf of Huon Aquaculture Group, Tassal Operations and Petuna Aquaculture. This has been the only instance of an aquaculture operation in Tasmania being referred under the EPBC Act.[17]

6.23 The Commonwealth Department of the Environment noted that the proposed action did not require assessment and approval under the EPBC Act if undertaken in accordance with the Macquarie Harbour Marine Farming Development Plan (MHMFDP). The MHMFDP included specific measures to protect the Maugean skate and the Tasmanian Wilderness World Heritage Area and involved monitoring and targeted management responses to protect the species habitat and water quality.[18]

---

13 Department of Primary Industries, Parks, Water and Environment, *Submission 35*, p. 7.

14 C Norwood, 'Salmonid industry expansion approved', *Fish*, December 2012 http://frdc.com.au/knowledge/publications/fish/Documents/FISH%2020-4%20Salmonid%20industry%20expansion%20approved.pdf (accessed 22 July 2015).

15 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 10.

16 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 10.

17 Department of the Environment, *Submission 40*, p. 1.

18 Department of the Environment, *Submission 40*, p. 2.

6.24 The Department of the Environment stated that the action was consequently able to proceed, subject to relevant state or local government requirements.[19]

6.25 In relation to monitoring, the Department of the Environment noted that, as the expansion in Macquarie Harbour was a 'not a controlled action–particular manner' decision under the EPBC Act is subject to monitoring by the Department in accordance with the EPBC Compliance Monitoring Plan 2014/2015. A monitoring inspection of the project was undertaken by the Department on 18 September 2013. No evidence of non-compliance with the particular manner requirements identified in the decision was found. The Department stated that no current compliance matters are being investigated by the Department.[20]

6.26 Submitters noted that the referral decision contained conditions to ensure that there are no significant impact to the Maugean skate as a result of changes to the benthic environment (condition 1) and no significant impact on the Tasmanian Wilderness World Heritage Area and the Maugean skate as a result of water quality changes (condition 2). In particular, submitters pointed to the following monitoring and targeted management responses in relation to water quality, including dissolved oxygen; benthic changes; and the imposition of the 52.5 per cent cap on total biomass (condition 2f).[21]

Issues in relation to waterway health in Macquarie Harbour

6.27 The environmental importance of Macquarie Harbour was identified by Environment Tasmania which stated that:

> Macquarie Harbour is unique within Australia, with highly unusual physical and hydrological characteristics, including highly stratified waters, a darkly stained brackish surface layer, and relatively deep basins separated from the sea by shallower areas.[22]

6.28 Ms Rebecca Hubbard, Environment Tasmania, added that it is one of only two estuaries of its kind in Australia and that 'it is the property of the Tasmanian public and our future generations and is therefore a significant concern for our community'.[23]

6.29 However, submitters commented that there are environmental and fish health concerns in Macquarie Harbour. This includes a downward trend in dissolved oxygen, an increase in visual impacts from fish farming sites beyond lease boundaries–that is

19 Department of the Environment, *Submission 40*, p. 2.

20 Department of the Environment, *Submission 40*, p. 2.

21 Australian Marine Conservation Society, *Submission 9*, p. 6.

22 Environment Tasmania, *Submission 93*, p. 7.

23 Ms Rebecca Hubbard, Marine Coordinator, Environment Tasmania, *Committee Hansard*, 16 July 2015, p. 3.

an increased abundance of Dorvilleid worms, disease outbreaks in farmed fish and mass mortalities of farmed fish.[24] Dr Elizabeth Smith commented:

> The waters of Macquarie Harbour are recognised as being low in nutrients and therefore more vulnerable than other waterways to the increased nutrient levels that will be unavoidable if expansion of aquaculture is permitted.[25]

6.30 Environment Tasmania also stated that DPIPWE has exposed listed endangered species and World Heritage Area values to 'considerable threats in Macquarie Harbour, without full understanding of how bad the impacts are or a management strategy to avoid them'.[26]

Dissolved oxygen levels in Macquarie Harbour

6.31 The levels of dissolved oxygen (DO) in Macquarie Harbour were raised in a number of submissions with two issues identified:

- the historically low levels of DO in Macquarie Harbour and its depletion over time; and
- the fish kill event in 2015.

6.32 Dr Adam Main, Chief Executive Officer, TSGA, commented that it has been known for 20 years that Macquarie Harbour is a low DO harbour. As part of the environmental impact statement for the amendment to the MHMFDP, the consulting company, Aquadynamic Solutions, undertook extensive work on the Macquarie Harbour environment. This included assessing all historical data sets to develop 'the best understanding of what the dissolved oxygen was and also what that would mean going forward with a biomass increase in the harbour. So we actually modelled according to the best available data at that time in regard to oxygen availability in the water'.[27]

6.33 Monitoring by the industry and the Tasmanian Environment Protection Authority (EPA) observed a decline in bottom water DO in Macquarie Harbour.[28] Dr John Whittington, Secretary, DPIPWE indicated that government agencies and the industry saw the need to improve understanding of the drivers of the changes to DO

---

24 See Environment Tasmania, *Submission 93*, p. 7.

25 Dr Elizabeth Smith, *Submission 91*, p. 2.

26 Environment Tasmania, *Submission 93*, p. 14.

27 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 31.

28 Dr John Whittington, Secretary, Department of Primary Industries, Parkes, Water and Environment, *Committee Hansard*, 15 July 2015, p. 3; see also Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 30.

levels.[29] As a consequence, the Macquarie Harbour Dissolved Oxygen Working Group was established in February 2014 'to look at the science behind the oxygen levels in Macquarie Harbour'.[30] The Working Group comprises the industry (Huon Aquaculture, Tassal and Petuna), Hydro Tasmania, CSIRO, IMAS and DPIPWE.[31]

6.34 The CSIRO was commissioned to review available data and recommend additional monitoring to assist industry, stakeholders and government to determine possible cause of the reduced DO.[32] The report was received in late 2014. Aquadynamic Solutions undertook further work to update the study to look at changes in DO from August 2014 to May 2015. This study was reviewed by IMAS, CSIRO and TSGA.[33]

6.35 The CSIRO's October 2014 report was made public by the Macquarie Harbour Dissolved Oxygen Working Group on 13 August 2015. The report indicated that there was a clear downward trend in the DO levels of the deep-waters (greater than 15 metres) of Macquarie Harbour over the period 2009 to July 2014. It was also found that the 'while our analysis suggests that aquaculture may be responsible for 3–12% of the benthic BOD (below 15 m), the implications for DO levels throughout the harbour are less clear'. In addition, it noted that river flow plays an important role in replenishing deep-water oxygen. Other factors such as wind, tidal height and atmospheric pressure also play significant roles in regulating oxygen replenishment. The report added that further data will clearly be required before the decline in DO can be definitively attributed.[34]

6.36 Aquadynamic Solutions provided the committee with the details of the main results of the CSIRO study and the update study. The results of the update study included that, at many depths, DO levels appear to have recovered to nearly the same levels as those observed at the start of the monthly monitoring program in late 2011 (based on May 2015 DO data). It was found that water level was a key factor in determining harbour dynamics. The key driver of water level elevation is the harbour

---

29 Dr John Whittington, Secretary, Department of Primary Industries, Parkes, Water and Environment, *Committee Hansard*, 15 July 2015, pp 3, 4.

30 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 30; see also Tasmanian Salmonid Growers Association, *Response to submissions*, pp 11, 32.

31 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 11.

32 Dr John Whittington, Secretary, Department of Primary Industries, Parkes, Water and Environment, *Committee Hansard*, 15 July 2015, p. 5; Tasmanian Salmonid Growers Association, 'Macquarie Harbour and Dissolved Oxygen Discussion', 3 March 2015, http://www.tsga.com.au/macquarie-harbour-and-dissolved-oxygen-discussion/ (accessed 2 August 2015).

33 Aquadynamic Solutions, *Submission 17*, p. 2.

34 Macquarie Harbour Dissolved Oxygen Working Group, Report, 6 October 2014, pp 40–41 http://www.tsga.com.au/macquarie-harbour-dissolved-oxygen-working-group-report-october-2014/ (accessed 13 August 2015).

was found to be air pressure (responsible for more than 40 per cent), followed by tide and then river flow.[35]

6.37 Aquadynamic Solutions commented that a better understanding of the processes operating within Macquarie Harbour and the physical forces driving oxygen recharge had been gained through the update study.[36] Aquadynamic Solutions added:

> Although a full understanding of attribution is still elusive the current update clearly identifies some of the causes for the historic DO depressions, oxygen recharges and the expected outcomes under a range of conditions both natural and farm/Hydro driven.[37]

6.38 Dr Neil Hartstein, Project Manager, Aquadynamic Solutions, explained the causes of changes in DO in greater detail:

> I think a lot of that has been about the climatic mechanisms or the environmental drivers behind recharge inside Macquarie Harbour. One of the interesting things that we have been doing working with CSIRO and IMAS over the last year or so is looking at essentially what are the driving mechanisms for providing fresh dissolved oxygen into Macquarie Harbour. We have identified the driving mechanisms and it relates essentially to climate forcings. You need certain kinds of climatic forcings to occur to get a recharge of dissolved oxygen into Macquarie Harbour in the bottom waters. Over the last six years, those recharge mechanisms probably have not been occurring as often as they have in the past, and one of the easy analogies to relate to that is in regard to salinity.
>
> We know that there is a very strong relationship in bottom waters in Macquarie Harbour. When you have high salinity in the bottom waters you also generally get high dissolved oxygen. We know that in five of the last six years salinity in the bottom waters has gone down rather than stayed stable or gone up, which essentially means that oceanic water from offshore that comes through Hells Gate and into the harbour has not been entering the harbour as often as it has in the past, and we have noticed in the last year that, when the dissolved oxygen has increased, salinity levels in the bottom waters have also increased along with that. So understanding these dynamics has been one of the most interesting and probably the most obvious changes in the harbour. This relates to the decrease in dissolved oxygen that we did see. But, as I said, it is now recharged again because the forcing dynamics, the climatic dynamics, have changed in the last year or so.[38]

---

35 Aquadynamic Solutions, *Submission 17*, p. 3; see also Tasmanian Salmonid Growers Association, *Response to submissions*, p. 11.

36 Aquadynamic Solutions, *Submission 17*, p. 3.

37 Aquadynamic Solutions, *Submission 17*, p. 3.

38 Dr Neil Hartstein, Project Manager, Aquadynamic Solutions, *Committee Hansard*, 16 July 2015, p. 24.

6.39 Dr Hartstein added that for oceanic water to come through Hells Gate:

> …you need to have strong north-westerly winds, you need to have a low pressure system, you need to probably have a spring tide and the wind needs to be sustained for a certain period of time as well. You need a combination of those things to all align at the same time. We have looked at a 23-year data set and we have observed that it has not been so frequent in recent years as it was in previous years, and just in the last year or so it has come back because the frequency has increased.[39]

6.40 Dr Donald Ross, IMAS, also commented that the studies provided information about the Macquarie Harbour DO system 'in terms of what the drivers are, but in terms of assigning attribution the data just is not there for us to be confident'.[40]

6.41 Dr Whittington noted that the CSIRO study had included some hypotheses about how the harbour operated and added that:

> …consistent with those hypotheses, with certain climatic events and changes in the operations of the Gordon River, the harbour has responded in a way that is consistent with that report.[41]

6.42 Dr Whittington further noted that the oxygen concentrations in the bottom waters are approximately equivalent to what they were four or five years ago. Dr Whittington concluded that the research that has been undertaken provides DPIPWE with 'some confidence that we are understanding the harbour' and 'confidence that the environment in Macquarie Harbour is being appropriately and adequately managed'.[42] In addition, he stated 'the CSIRO report talks about the various things that cause and contribute to low dissolved oxygen. Salmon farming is only a small part of that'.[43]

6.43 The TSGA reported that it had significantly increased monitoring and sampling of DO. Further, the industry is working with the CSIRO, UTAS and Sense-t on developing an 'innovative and world first Decision Support System (DSS) with a particular focus on oxygen'. The project will involve international sensor experts and will require 'some creative networking solutions due to the remoteness of the west

---

39 Dr Neil Hartstein, Project Manager, Aquadynamic Solutions, *Committee Hansard*, 16 July 2015, p. 24; see also Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 31.

40 Dr Donald Ross, Senior Research Fellow, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 44.

41 Dr John Whittington, Secretary, Department of Primary Industries, Parkes, Water and Environment, *Committee Hansard*, 15 July 2015, p. 5.

42 Dr John Whittington, Secretary, Department of Primary Industries, Parkes, Water and Environment, *Committee Hansard*, 15 July 2015, pp 4, 5.

43 Dr John Whittington, Secretary, Department of Primary Industries, Parkes, Water and Environment, *Committee Hansard*, 15 July 2015, p. 11.

coast'.[44] It also stated that additional work has been undertaken and completed in relation to the recommendations contained in the Working Group report.[45]

6.44 However, Environment Tasmania refuted the evidence from Dr Whittington that DO levels had increased back to the long-term normal level. Environment Tasmania stated that the industry and the government had 'been promoting one month's percentage increase in dissolved oxygen levels through media, when a detailed look at the leaked reports shows system-wide changes outside the long-term trends, with the harbour potentially moving to "a new equilibrium" – meaning a catastrophic shift in the ecosystem'.[46]

6.45 In its supplementary submission, Environment Tasmania provided IMAS datasets for Macquarie Harbour to support its claim and stated that the 'data loggers are in the World Heritage Area and should therefore be taken with extra seriousness'.[47]

6.46 In response to this evidence, the TSGA commented that harbour-wide, DO levels in bottom and mid waters have returned to, or are approaching, those recorded at the start of the industry monitoring period in 2011. In relation to the World Heritage Area, the TSGA provided an extensive response on monitoring outcomes and concluded that 'the observed fluctuations in DO levels within the [World Heritage Area] over many years would appear to be of little significance to the ecology of the [World Heritage Area] and the primary concern has been addressed with a positive outcome'.[48]

Fish kill event

6.47 In May 2015, approximately 85,000 fish (3.7 per cent of fish stocks) farmed by Petuna in Macquarie Harbour were killed. Dr Whittington noted that the fish kill was the result of very low DO concentrations which occurred during an extreme climate event:

> …we had extremely high north-westerly winds blowing down the harbour for a number of days, coupled with very low pressure. Essentially, that caused water in the harbour to get blown to the bottom end—the south-eastern end of the harbour—which then caused or enabled a significant recharge of ocean water into the harbour. That oceanic water is dense, so it

44 Tasmanian Salmonid Growers Association, 'Macquarie Harbour and Dissolved Oxygen Discussion', 3 March 2015, http://www.tsga.com.au/macquarie-harbour-and-dissolved-oxygen-discussion/ (accessed 2 August 2015).

45 Tasmanian Salmonid Growers Association, http://www.tsga.com.au/macquarie-harbour-dissolved-oxygen-working-group-report-october-2014/ (accessed 14 August 2015).

46 Environment Tasmania, *Submission 93*, p. 9.

47 Environment Tasmania, *Supplementary Submission 93*, p. 2.

48 Tasmanian Salmonid Growers Association, *Supplementary Submission 33*, p. 3.

> slides in at an appropriate depth in the harbour, and that can cause, essentially, waves internal to the water body.[49]

6.48 Dr Whittington went on to emphasise that the low DO water that upwelled resulted in the mortality event at a single lease in the harbour.[50]

Biomass cap

6.49 As noted above, the referral decision contained a condition in relation to total biomass in Macquarie Harbour:

> The total biomass held across all lease areas must not exceed 52.5 percent of the modelled maximum sustainable biomass until limit levels are reviewed in mid 2013, and must not exceed any such altered levels as may be identified thereafter by the Tasmanian Government.[51]

6.50 The committee received evidence that the condition in the referral decision was an interim measure to enable the Tasmanian Government to set a new biomass limit for Macquarie Harbour.[52] Dr Main stated that the 52.5 per cent cap was:

> …an interim measure set by the EPBC [Act] until industry and government could sit down and review what we would have as appropriate trigger limits going forward for the industry and appropriate biomass limits and a whole range of other variables. It was an interim measure to give the process the time it required to come up with a workable solution going forward for the longevity of Macquarie Harbour. So it was a point in time interim measure.[53]

6.51 It was noted that the review was undertaken and Dr Whittington stated that the 'condition fell away with the submission of a review which occurred'.[54] As a consequence, 'the companies were then operating under the Tasmanian legislation and

---

49 Dr John Whittington, Secretary, Department of Primary Industries, Parkes, Water and Environment, *Committee Hansard*, 15 July 2015, p. 10; see also Dr Donald Ross, Senior Research Fellow, Institute for Marine and Antarctic Studies, *Committee Hansard*, 15 July 2015, p. 44.

50 Dr John Whittington, Secretary, Department of Primary Industries, Parkes, Water and Environment, *Committee Hansard*, 15 July 2015, p. 11.

51 Department of Sustainability, Environment, Water, Population and Communities, *Notification of REFERRAL DECISION – not controlled action if undertaken in a particular manner, Marine Framing Expansion, Macquarie Harbour, Tasmania* (EPBC 2012/6406)

52 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 28.

53 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 28.

54 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 9.

were acting in accordance with that'.[55] The DPIPWE indicated that the biomass condition lapsed on 18 October 2013.[56]

6.52 In setting a new biomass limit, as well the research conducted by CSIRO and others over the last two to three years, Dr Main commented that the Tasmanian Government has engaged a third party to help set new biomass limits for Macquarie Harbour. He went on to state:

> They are going through a process right now of getting peer reviewed international scientists to look at the issues, all facets of the issues, all the information from a range of different sources. There is a broad church of people contributing to the review.[57]

6.53 The result of that review will be provided to the state government. Dr Main added that the state government will then provide the companies with the outcomes which 'the companies are prepared to accept'.[58]

6.54 Dr Main further noted that the current stocking levels are similar to the 52.5 per cent cap and the industry is undertaking 'a step-wise increase of expansion into Macquarie Harbour'.[59]

Alleged breach of the 52.5 per cent cap

6.55 On 3 March 2015, Mr Kim Booth, the then leader of the Greens in the Tasmanian House of Asssembly, tabled a leaked email sent to the Tasmanian Premier from Mr Mark Porter, Chief Executive Officer, Petuna, and Mr Peter Bender, Managing Director, Huon Aquaculture.[60]

6.56 The email, dated 19 September 2014, detailed concerns about the water quality in Macquarie Harbour. The email indicated that fish farmed by Tassal had been treated with antibiotics to control a disease outbreak. Mr Porter and Mr Bender commented that this represented a 'clear warning sign that the environment we are growing fish in is becoming compromised'.[61]

---

55 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, *Committee Hansard*, 15 July 2015, p. 10.

56 Department of Primary Industries, Parks, Water and Environment, *Answers to questions on notice*, No. 2.

57 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 29.

58 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 29.

59 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 29.

60 Mr Kim Booth, Leader of the Greens, *Hansard*, Tasmanian House of Assembly, 3 March 2015, pp 17–18.

61 Tasmanian House of Assembly, *Tabled paper*, 3 March 2015.

6.57 The email also commented on the 52.5 per cent cap, with Mr Porter and Mr Bender stating that Government advice that there was no cap in place as of October 2013, was contrary to the industry's understanding. Further, the email included comments on a predicted breach of the cap in October 2014 by Tassal.[62]

6.58 In response to questions concerning the conditions in Macquarie Harbour at the time of the comments from Mr Porter and Mr Bender, Dr Whittington stated that:

> These were complicated times. There was a fair bit of concern, both within the agency as a regulator and within the companies, on what was happening in the harbour.[63]

6.59 Dr Whittington also stated that he had no knowledge of any breach of the cap prior to the submission of the review.[64] In relation to the comments in the leaked email, Dr Whittington stated that the cap had fallen away by the time the emails were circulated, 'so there was no cap to be breached at that point in time. The companies were producing salmon in accordance with the regulatory requirements that we were imposing at that stage'. Dr Whittington also stated:

> The assertions in that email are factually incorrect, in my view. It is not appropriate for me to speculate because that is factually incorrect. As I have said, when that cap was in place before it fell away with the submission of the review it was in the context of the total production in the harbour; it was not apportioned between companies. Each company was at liberty to grow within the context of their licence conditions.[65]

6.60 The TSGA was also questioned about whether the cap was removed because one of the companies in Macquarie Harbour was going to breach the cap. Dr Main responded:

> Absolutely not. It was a specific finite time frame. The life of the cap had a specific time frame. It was to allow a review by both industry and governments in order to make a decision on how to proceed forward from that point. At that particular time, the lifting of the cap would have allowed the industry to then go ahead and put into the harbour the biomass that we modelled for and that had been approved through the EIS process. We are

62 Tasmanian House of Assembly, *Tabled paper*, 3 March 2015.

63 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, Tasmania, *Committee Hansard*, 15 July 2015, p. 3; see also Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 30.

64 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, Tasmania, *Committee Hansard*, 15 July 2015, p. 9.

65 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, Tasmania, *Committee Hansard*, 15 July 2015, p. 10.

> actually nowhere near that limit at the moment. We are taking a far more conservative stepwise approach to putting biomass into the harbour.[66]

6.61 Dr Main also noted that the email was a 'point-in-time communication' and what was in the email 'is just not what is apparent now in the current time frame'. He emphasised that the salmonid industry was very united.[67]

6.62 Ms Feehely, EDO Tasmania, commented on the timing of the removal of the cap and noted that it was to be reviewed to identify a sustainable biomass limit.[68] In relation to when the cap no longer applied, Ms Feehely stated that 'arguably it cannot exceed 52.5 until it is reviewed and an altered level is set'.[69]

Biological changes

6.63 A further issue raised by submitters was the increased abundance of Dorvilleid in Macquarie Harbour. The Australian Marine Conservation Society stated that Dorvilleid are 'opportunistic polychaete worms, abundance of which are known to increase in stressed or polluted conditions'. Dorvilleid have been recorded within the World Heritage Area.[70]

6.64 The TSGA commented that Dorvilleid were not identified during the initial processes under the EPBC Act for the expansion of marine farming at Macquarie Harbour. Dr Main stated that the Dorvilleid debate and discussion arose after the decision that the expansion was not a controlled action. Dr Main went on to comment that:

> …the dorvilleid worms in Macquarie Harbour are actually a naturally occurring species. People have a perception that they are a result of industry or that they have been introduced. We have even heard a range of views about their having been introduced by industry. They are a naturally occurring species in Macquarie Harbour. Nor is there any evidence or suggestion that they have never been in the world heritage area. These are a species that occurs harbour-wide. The actions of the worms are absolutely critical for Macquarie Harbour. They break down stuff. They get rid of the stuff that comes down through the catchment, and from salmon farms, as

66 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 29.

67 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 28.

68 Ms Jessica Feehely, Principal Lawyer, Environmental Defenders Office Tasmania, *Committee Hansard*, 15 July 2015, p. 56.

69 Ms Jessica Feehely, Principal Lawyer, Environmental Defenders Office Tasmania, *Committee Hansard*, 15 July 2015, p. 57.

70 Australian Marine Conservation Society, *Submission 9*, p. 6.

> well. Dorvilleid worms have a part in the ecosystem of Macquarie Harbour.[71]

6.65 Dr Whittington, DPIPWE, commented that the presence of Dorvilleid in Macquarie Harbour did not indicate a breach of the EPBC Act conditions. He went on to state that Dorvilleid numbers are monitored, particularly through remote operated cameras. They have been used by regulators for a number of years as a bioindicator and by industry to gain an understanding about 'what is going on in marine farming operations'. Dr Whittington noted that 'numbers have increased considerably in lease areas and well outside of lease areas in Macquarie Harbour. We do not understand at this point in time exactly what that means for the environment'.[72]

6.66 Dr Whittington stated that, as it is not understood exactly the reason for the increase, a study has been commissioned to gain further information on Dorvilleid in Macquarie Harbour. He concluded, while there are Dorvilleid present, 'that in itself is not necessarily a bad thing, but it is certainly something we would like to understand'.[73]

6.67 IMAS provided the committee with an outline of the project to review the current understanding of Dorvilleid ecology and in particular, their response to organic enrichment as well as their current use as indicator of the impacts of fin-fish farming. IMAS commented that preliminary results 'suggest that Dorvilleids can be effective indicators of sediment condition in Macquarie Harbour, although some considerations need to be taken into account when using them for monitoring'.[74]

Role of the Commonwealth

6.68 While noting the Commonwealth's involvement in the aquaculture industry through the EPBC Act, many submitters considered that the regulation of the industry was a state matter. For example, the Australian Workers' Union commented:

> We do not believe that role should be expanded any further. We think that the Commonwealth should confirm with the Tasmanian government that it recognises that this is a matter properly regulated by the Tasmanian government.[75]

---

71 Dr Adam Main, Chief Executive Officer, Tasmanian Salmonid Growers Association, *Committee Hansard*, 15 July 2015, p. 30; see also Tasmanian Salmonid Growers Association, *Response to submissions*, p. 10.

72 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, Tasmania, *Committee Hansard*, 15 July 2015, p. 6.

73 Dr John Whittington, Secretary, Department of Primary Industries, Parks, Water and Environment, Tasmania, *Committee Hansard*, 15 July 2015, p. 6.

74 Institute for Marine and Antarctic Studies, *Submission 20*, p. 12.

75 Mr Robert Flanagan, Assistant Branch Secretary, Australian Workers' Union, Tasmanian Branch, *Committee Hansard*, 15 July 2015, p. 22; see also Huon Resource Development Group, *Submission 75*, p. 2.

6.69 However, EDO Tasmania commented that the Commonwealth Government should still have a role in monitoring the environmental impacts of fin-fish farming in Macquarie Harbour. Ms Feehely stated that:

> Clearly, aquaculture management in interstate waters is principally a state issue. However, where aquaculture activities impact on matters of national environmental significance, whether that is threatened species, water quality, Ramsar wetland's or heritage places, that is a matter for the federal government. To the extent that the federal government effectively delegates its responsibility for managing these impacts to the state government, whether through the prescribed manner—the decision in relation to Macquarie Harbour—or any future bilateral agreement, the effectiveness of Tasmania's regulatory framework is something that should concern the federal government.[76]

6.70 EDO Tasmania noted that the expansion in Macquarie Harbour was determined to be not a controlled action and, as such:

> …the Federal Minister is now unable to intervene to address significant impacts, unless the Minister is satisfied that the action is not being carried out in the manner described. This unduly restricts the Minister's ability to take action to protect threatened species and World heritage values.[77]

6.71 However, pursuant to section 78 of the EPBC Act, the Minister may revoke this decision and replace it with a decision that the matter is a controlled action that requires assessment, if satisfied that this is warranted because:

- substantial new information about the impacts of the action is available;
- a substantial change in circumstances has occurred that was not foreseen at the time of the decision.[78]

6.72 Ms Feehely went on to comment on the conditions contained in the EPBC Act referral decision and action that could be taken if those conditions were not met. She stated that most conditions were iterative, that is once a problem was identified, an action would be required to address it. However, the biomass cap was a firm decision that could be breached. Ms Feehely went on to state:

> Where an operation is not being conducted in accordance with the prescribed manner that is set out in a decision, the minister has the opportunity to reconsider that decision and decide that it is in fact an action that should be controlled under the EPBC Act and that enforcement action is able to be taken by the federal minister. Equally, even where the prescribed manner is being complied with, but there is evidence either through changed circumstances or significant new scientific information

76 Ms Jessica Feehely, Principal Lawyer, EDO Tasmania, *Committee Hansard*, 15 July 2015, p. 52.

77 EDO Tasmania, *Submission 70*, p. 14.

78 EDO Tasmania, *Submission 70*, p. 14.

> about the impacts, there is also the opportunity to reconsider whether in fact those impacts are more significant than originally anticipated and significant to the extent that it should now fall within the EPBC Act and the federal minister should have some role in regulating that activity.[79]

6.73 Ms Feehely concluded:

> Irrespective of whether the conditions themselves or the prescribed manner is being complied with…there is also the opportunity under the EPBC Act for that decision to be reconsidered if the impacts are seen as being significantly higher than they were anticipated. So, information in relation to water quality might be a reason for the minister to reconsider whether or not it should be controlled under the EPBC Act.[80]

6.74 EDO Tasmania argued that the Minister should consider revoking the original decision in the light of evidence of nutrient issues, low DO levels and concerns regarding expected water flows. In addition, as a controlled action, the Minister would be able to take enforcement action where Tasmanian Government regulators have failed to do so.[81]

6.75 Similarly, Environment Tasmania stated:

> The failure of the Tasmanian regulator to adequately protect those matters is an excellent example of why it is so important that the Federal Government maintain oversight for species and areas recognised by the EPBC Act as having special importance.[82]

Committee comment

6.76 The committee notes that the expansion of aquaculture in Macquarie Harbour has been the only Tasmanian aquaculture matter referred to the Commonwealth under the EPBC Act. The expansion was found not to be a controlled action under the EPBC Act if undertaken in accordance with the Macquarie Harbour Marine Farming Development Plan. The Commonwealth has maintained a monitoring role and as such, the Department of the Environment undertook a monitoring inspection in September 2013.

6.77 The committee acknowledges the importance of the health of the marine environment in Macquarie Harbour given that it is only one of two stratified water systems in Tasmania, its proximity to the Tasmanian Wilderness World Heritage Area and as habitat for the endangered Maugean skate.

---

79 Ms Jessica Feehely, Principal Lawyer, Environmental Defenders Office Tasmania, *Committee Hansard*, 15 July 2015, p. 56.

80 Ms Jessica Feehely, Principal Lawyer, Environmental Defenders Office Tasmania, *Committee Hansard*, 15 July 2015, p. 56.

81 EDO Tasmania, *Submission 70*, p. 14.

82 Environment Tasmania, *Submission 93*, p. 15.

6.78 Evidence from environmental groups raised concerns about recent changes to dissolved oxygen levels in the Macquarie Harbour. The committee notes that in 2013 fluctuations to the levels of dissolved oxygen were observed. Given the impact of low levels of dissolved oxygen on the marine environment, fish health and thus the sustainability fish farming in Macquarie Harbour, the Tasmanian Government and the industry sought expert scientific assistance to identify the drivers of these changes.

6.79 Research commissioned by the Macquarie Harbour Dissolved Oxygen Working Group, undertaken by CSIRO, has provided greater understanding of the Macquarie Harbour marine environment, the causes of changes to dissolved oxygen levels and has indicated that dissolved oxygen levels have returned to those previously observed. Further, the harbour has responded in a way consistent to that predicted by the CSIRO research. The committee also notes that, in response to concerns about dissolved oxygen levels, the industry has increased monitoring and sampling the results of which are reported to the Department of Primary Industries, Parks, Water and Environment. The industry is also responding to the recommendations of the CSIRO research.

6.80 The committee notes the government's and the industry's commitment to ensuring the ongoing health of Macquarie Harbour. The committee considers that there has been a timely and appropriate response to issues related to fluctuations of dissolved oxygen in the harbour. Further, that ongoing research and adaption of farming practices as a result of that research will ensure that the environmental impacts on the Tasmanian Wilderness World Heritage Area are not significant.

6.81 Evidence was also provided about the research undertaken to improve knowledge of the Maugean skate and the increased abundance of Dorvilleid in the harbour. The committee notes the preliminary findings that there appear to be more Maugean skate in the harbour than originally suggested (see chapter 4 for further information).

6.82 There was considerable discussion in evidence in relation to the biomass cap for farming operations in Macquarie Harbour. The committee also notes that it was the leaking of an email from the chief executives of Petuna and Huon Aquaculture concerning, among other matters, the biomass cap which led to the reference of the inquiry to the committee.

6.83 The biomass cap of 52.5 per cent was contained in the Commonwealth's referral decision. It was set as an interim measure until a review was undertaken in mid-2013 and the Tasmanian Government identified an altered level. The review was completed in October 2013. The committee notes that at that time, changes in dissolved oxygen levels were observed which resulted in further research being undertaken by CSIRO. The Tasmanian Government also sought an international third-party scientific review to inform its decision about the allowable biomass for Macquarie Harbour. In addition, the industry commented that the biomass has remained close to the cap contained in the referral decision.

6.84 The committee considers that the Tasmanian Government's approach to an altered biomass in Macquarie Harbour is sound. As well as the initial review, the Government has sought a further third-party review to assist it identify an altered biomass level. The committee notes that industry has stated that it will abide by the findings of the third-party review.

6.85 The committee concludes that the current monitoring and regulatory regime provides adequate oversight of fin-fish farming operations in Macquarie Harbour and addresses emerging issues in a timely way as required by the referral decision. In addition, much research has been undertaken recently to understand changes in the harbour. As a consequence, the committee does not believe that, at the present time based on the evidence before it, there is a need to consider the intervention of the Commonwealth as provided for under the EPBC Act.

6.86 Nonetheless, the Department of the Environment has an ongoing monitoring role for Macquarie Harbour. However, the committee observes it was unclear from the evidence received as to the extent of the engagement with the Department that was undertaken by the industry as issues with the marine environment in Macquarie Harbour emerged. The committee therefore encourages the Department to consider a further monitoring inspection as part of its next year's annual compliance monitoring plan.

Chapter 7

The fin-fish industry's contribution to the Tasmanian economy and employment

7.1 This chapter examines the importance of the fin-fish aquaculture industry to the Tasmanian economy and the improvement of workforce participation rates for the state. It also examines the industry's significant investment in training and education, and the role it plays in revitalising rural and regional communities, particularly those suffering from the downturn in traditional industries such as forestry and mining.

Economic value of the fin-fish aquaculture industry

7.2 The committee received numerous submissions highlighting the importance of the aquaculture industry to the Tasmanian economy. The following paragraphs outline this evidence

Direct economic contribution

7.3 In 2012–13, the gross value of overall fisheries production in Tasmania was $696 million, with salmonid aquaculture contributing $489 million.[1] A 2015 report by KPMG found that the Tasmanian salmonid industry has a turnover of $1.12 billion and represents 2.3 per cent of Tasmania's gross state product.[2] It is Tasmania's most valuable primary industry in terms of the value of production.[3] The real gross value of Tasmania's aquaculture production has increased significantly over the past decade, as shown by Figure 7.1. Although the majority of the economic benefits from the industry are experienced within Tasmania, the salmonid aquaculture industry also contributes over $115 million to mainland economies.[4]

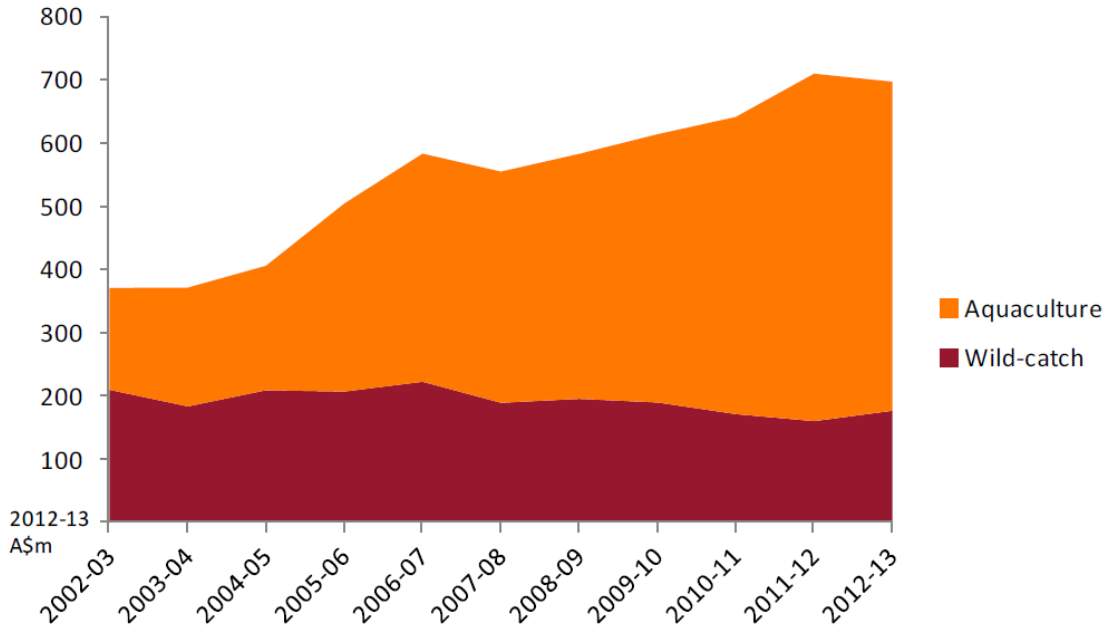
1 Department of Agriculture, *Submission 10*, p. 2.

2 KPMG, *Economic Impact Assessment; Tasmanian Aquaculture Industry May 2015*; cited in Tasmanian Salmonid Growers Association, *Submission 33*, p. 33.

3 Tasmanian Government, *Submission 35*, p. 20.

4 Tasmanian Salmonid Growers Association, *Submission 33*, p. 34.

Figure 7.1: Real gross value of Tasmanian fisheries production, 2002–03 to 2012–13



Source: M Stephan and P Hobsbawn, Australian fisheries and aquaculture statistics 2013, ABARES Fisheries Research and Development Corporation project 2010/208; reproduced in Department of Agriculture, Submission 10, p. 3.

7.4 Australia's farmed salmonids are almost entirely from Tasmania. At a national level, production increased from 16,686 tonnes in 2003–04 to 41,615 tonnes in 2013–14. The Commonwealth Department of Agriculture indicated that the volume of Australian salmonids production is forecast to continue to grow with a forecasted expansion of 3500 tonnes in 2014–15. In 2015–16, the volume is forecast to expand by a further 2300 tonnes, due in part to the planned industry expansion of production in Macquarie Harbour. Over the medium term, salmon production is projected to reach 61,400 tonnes by 2019–20.[5]

7.5 Currently, Tasmanian aquaculture salmonids are primarily produced for domestic markets and only contributed $14 million of the total Tasmanian fisheries export value of $144 million in 2013–14. However, 81 per cent of salmonid exports from Australia over the past decade originated in Tasmania.[6]

Indirect economic effects

7.6 It is clear that Tasmania's fin-fish aquaculture industry has strong links with other sectors of the economy, such as the service and transport industries. These links generate a multiplied output or turnover effect and expand the capacity and depth of

5 Department of Agriculture, *Submission 10*, pp 2–3.

6 Department of Agriculture, *Submission 10*, p. 4.

the economy.[7] A report from the Australian Innovation Research Centre published in 2012 highlighted these links and commented that it is:

> …vital that Tasmania strengthen and grow its private sector...[as] expanding Tasmania's private sector is the key to long-term diversification and economic security for Tasmanians.[8]

7.7 The aquaculture industry provides direct employment and supports ancillary businesses which have proved valuable for local economies. The committee received submissions from a number of companies detailing the work they undertake in support of the aquaculture industry. This includes in electrical and mechanical services, refrigeration, metal fabrication, logistics, transport, and concreting and construction.[9] Without the aquaculture industry, these companies would suffer negative consequences. For example, Scielex Pty Ltd stated that:

> We have little doubt that our organisation exists in its present form because of the presence of the aquaculture industry in Tasmania…if there was any reason that the Tasmanian aquaculture industry was undermined or restricted, then it would have a direct negative impact on our company.[10]

7.8 Duggans Pty Ltd, a family owned business which has been based in the Huon Valley for the past 88 years, stated in its submission to the committee that:

> Since commencing in the mid 1980s the salmon industry has grown to provide both direct and indirect employment in the Huon Valley and economic activity…Without the rise of industries such as the aquaculture industry, many of our regional centres would be ghost towns with high unemployment and little economic activity.[11]

7.9 Duggans Pty Ltd also indicated that although it is not directly involved in the aquaculture industry:

> …its future and the jobs of its employees depend upon the economic activity of the salmon industry to create demand for housing, commercial buildings, roads, and concrete and quarry products it produces.[12]

---

7 Tasmanian Salmonid Growers Association, *Submission 33*, p. 34.

8 West, J et al. (2012), *Diversifying Tasmania's Economy: Analysis and Options–final report*, Australian Innovation Research Centre, Department of Infrastructure and Regional Development, cited in Tasmanian Salmonid Growers Association, *Submission 33*, p. 38.

9 See for example G & D Transport Pty Ltd, *Submission 21*, Motors Group Tasmanian Pty Ltd, *Submission 23*, Scielex Pty Ltd, *Submission 24*, Duggans Pty Ltd, *Submission 25*; Veolia, *Submission 32*.

10 Scielex Pty Ltd, *Submission 24*, p. 2.

11 Duggans Pty Ltd, *Submission 25*, p. 1.

12 Duggans Pty Ltd, *Submission*, p. 2.

7.10 In addition to businesses carrying out work in support of the fin-fish aquaculture industry, there is also considerable flow-on economic activity to the rest of the community. The Australian Workers' Union stated that:

> …the indirect impact has been flow-on activity which has meant that existing businesses within those regions have been able to have enough turnover as a consequence of the growth of aquaculture so that the communities have remained robust.[13]

Jobs, skills and workforce development

7.11 The importance of the fin-fish aquaculture industry for employment, skills and workforce development in Tasmania is significant. With Tasmanian educational attainment and employment rates generally lower than those in the rest of Australia, the industry provides not only employment opportunities, but also opportunities for skills improvement of the Tasmanian workforce.

7.12 In Tasmania, less than one in five (18 per cent) of 15 to 19 year olds in Tasmania have Year 12 or equivalent qualifications compared with one in four (26 per cent) nationally based on Australian Bureau of Statistics (ABS) 2011 census data. Similarly, for 20 to 24 year olds, 57.4 per cent of Tasmanians have Year 12 or equivalent qualifications, compared with 69.9 per cent nationally.[14]

7.13 The 2011 census also indicated that the percentage of 25 to 34 year olds in Tasmania who have attained advanced diploma, diploma and certificate level qualifications (34 per cent) is now higher than the percentage nationally (30 per cent).[15] However, participation in higher education in Tasmania is still lower than the Australian average. In Tasmania, only 22 per cent of people aged 25 to 34 have bachelor degree or higher qualifications compared to 32 per cent nationally.[16]

7.14 Adult literacy levels in Tasmania are also lower than the rest of Australia. The ABS found, in 2006, that literacy skills of Tasmanians aged 15 to 74 years were the lowest in the nation, and there had been no improvement since they were measured in

---

13 Mr Robert Flanagan, Assistant Branch Secretary, Australian Workers' Union, *Committee Hansard,* 15 July 2015, p. 19.

14 The Office of Regional Education, Skills and Jobs, *Regional Education, Skills and Jobs Plan – Tasmania 2012–2014, (July 2013)* http://docs.employment.gov.au/system/files/doc/other/resj_tasmania.pdf (accessed 22 July 2015).

15 The Office of Regional Education, Skills and Jobs, *Regional Education, Skills and Jobs Plan – Tasmania 2012–2014, (July 2013)* http://docs.employment.gov.au/system/files/doc/other/resj_tasmania.pdf (accessed 22 July 2015).

16 The Office of Regional Education, Skills and Jobs, *Regional Education, Skills and Jobs Plan – Tasmania 2012–2014, (July 2013)* http://docs.employment.gov.au/system/files/doc/other/resj_tasmania.pdf (accessed 22 July 2015).

1996.[17] The ABS also found that around half of the Tasmanian population aged 15 to 74 years lack the literacy skills needed to cope with the demands of everyday life and work. For example, 49 per cent of adult Tasmanians, or approximately 174,000 people, do not have the basic skills needed to understand and use information from newspapers, magazines, books and brochures.[18]

7.15 Tasmania's rate of adult literacy is influenced by a range of factors including the higher prevalence of older persons in the population, and lower school retention rates and post-school qualifications. Recent information from the ABS also suggests that Tasmanians in regional municipalities tend to have lower literacy levels compared to those living in major metropolitan areas.[19]

7.16 The estimated unemployment rate in Tasmania was 6.9 per cent in June 2015, compared to the national average of 6 per cent. Tasmanian employment was estimated at 238 900 persons in June 2015, a participation rate of 60.9 per cent.[20] Workforce participation is likely affected by a range of factors including the levels of adult literacy, and availability of alternative employment in rural areas where industries such as forestry and mining have declined.

7.17 The fin-fish aquaculture industry provides employment in 26 of the 29 local government areas. Crucially, the industry is responsible for 31 per cent of private sector employment in the Huon Council Area, 14 per cent in the West Coast Council Area and almost 10 per cent in the Tasman Council Area. The Huon and Tasman areas have all been significantly affected by downturns and closures in the forestry and mining sectors.[21] The Australian Workers' Union noted that:

> …as the forest industry has shrunk and reduced and as this industry [aquaculture] has grown, this industry has been able to provide a well-trained, stable, full-time employment opportunity in those regions which quite simply would not otherwise be there.[22]

---

17 Department of Education Tasmania, *Tasmanian Adult Literacy Action Plan 2010–2015*, https://www.education.tas.gov.au/documentcentre/Documents/Tasmanian-Adult-Literacy-Action-Plan.pdf (accessed 22 July 2015).

18 Department of Education Tasmania, *Tasmanian Adult Literacy Action Plan 2010–2015*, https://www.education.tas.gov.au/documentcentre/Documents/Tasmanian-Adult-Literacy-Action-Plan.pdf (accessed 22 July 2015).

19 Department of Education Tasmania, *Tasmanian Adult Literacy Action Plan 2010–2015*, https://www.education.tas.gov.au/documentcentre/Documents/Tasmanian-Adult-Literacy-Action-Plan.pdf (accessed 22 July 2015).

20 Department of Treasury and Finance Tasmania, *Labour Force (ABS Cat No 6202.0)*, http://www.treasury.tas.gov.au/domino/dtf/dtf.nsf/LookupFiles/Labour-Force.pdf/$file/Labour-Force.pdf (accessed 22 July 2015).

21 Tasmanian Salmonid Growers Association, *Submission 33*, p. 36.

22 Mr Robert Flanagan, Assistant Branch Secretary, Australian Workers Union, *Committee Hansard*, 15 July 2015, p. 19.

7.18 The Tasmanian fin-fish aquaculture industry currently employs 1571 people and supports a further 3769 full-time equivalent (FTE) jobs in both Tasmania and the rest of Australia. In April 2015, the industry employed one out of every 100 persons in the state and accounted for 10 per cent of FTEs in the Tasmanian agriculture, forestry and fishing sector.[23]

7.19 As has been previously noted, the industry is expanding. The 2012 Australian Innovation Research Centre report stated that it is estimated that new farms could create a further 800 FTE jobs in the near future. Beyond this, as many as a further 1000 farming and 100 processing FTE jobs could be created, with support for a further 1233 FTE jobs.[24] For example, in July 2015 Huon Aquaculture opened its new $12 million Smokehouse and Product Innovation Centre at Parramatta Creek. This created an additional 70 jobs in north Tasmania.[25]

7.20 Employees in the salmonid industry earn more than other employees in other sectors in Tasmanian: the average weekly wage for salmonid industry employees is almost double the Tasmanian average which is significant in the context of the largely rural and regional nature of the industry.[26] According to the Australian Workers' Union:

> All of the aquaculture companies, with the exception of Van Diemen Aquaculture in the Tamar Valley, have in place enterprise agreements with the union. We are currently in the process of concluding an enterprise agreement with Van Diemen Aquaculture. The effect of those enterprise agreements is that the average earnings of people in aquaculture are approximately $1,200 a week, compared to the Tasmanian community average earnings of about $700 a week. So when we talk about a living wage we are talking about a wage which can support the livelihoods of families and keep them within the communities that they have grown up in.[27]

7.21 The importance of the salmonid industry to local communities was emphasised in evidence. The Australian Workers' Union stated:

> The aquaculture industry supports communities with two fundamental foundations on which those communities can build and prosper: firstly, a living wage and livelihood rather than a minimum safety-net wage; secondly, a highly skilled workforce with a stable, reliable, full-time

23 Tasmanian Salmonid Growers Association, *Submission 33*, pp 34–35.

24 West, J et al. (2012), *Diversifying Tasmania's Economy: Analysis and Options–final report*, Australian Innovation Research Centre, Department of Infrastructure and Regional Development, cited in Tasmanian Salmonid Growers Association, *Submission 33*, p. 38.

25 C Slessor, 'Huon Aquaculture's $12m Parramatta Creek processing facility creates 70 jobs', *The Advocate*, 4 July 2015.

26 Tasmanian Salmonid Growers Association, *Submission 33*, p. 35.

27 Mr Robert Flanagan, Assistant Branch Secretary, Australian Workers' Union, *Committee Hansard*, 15 July 2015, p. 19.

> employment rather than unskilled, itinerant or casual work. The significance of those two foundations cannot be overstated in the role that they play in contributing to healthy and robust regional communities within which they operate.[28]

7.22 The Australian Workers' Union went on to give the example of the Huon Valley where approximately 600 people are directly employed in aquaculture. This area at one time had large orchards, however:

> …the type of work that is available in that region if you did not have aquaculture is itinerant, unskilled casual work. It is not the sort of work or the sorts of earnings which can sustain the community in itself. So it is fundamentally a part of sustaining that part of Tasmania. We know from our experience with mine closures on the west coast that if you have a single industry which plays a significant role in underpinning the community and that industry disappears, the community suffers very seriously and shrinks very quickly and the services that are available retreat.[29]

Training and skills development

7.23 The TSGA highlighted the diversity of skills required in the industry, with Dr Adam Main, Chief Executive Officer, commenting that skilled people are employed by the industry in such areas as human resources, IT, processing, aquaculture innovation, science, quality control, marketing and distribution. Dr Main added that:

> Their expertise and expanding skills are fundamental to the industry as it moves forward. It is this self-belief and passion that reinforce our sense of providence. Tasmanian salmon is produced by truly local teams, and this is invaluable in the way we market our product.[30]

7.24 The committee received a number of submissions which also highlighted the importance of training and skills certification, both for current aquaculture employees, and for the future development of the industry. The Huon Valley Trade Training Centre (HVTTC) described the salmonid industry as an 'advanced technological industry' that requires highly skilled employees. This is in contrast to industries such as resource extraction, and has required a 'fundamental change' in the employment profile in areas such as the Huon Valley.[31]

---

28 Mr Robert Flanagan, Assistant Branch Secretary, Australian Workers' Union, *Committee Hansard,* 15 July 2015, p. 18; see also Mr Julian Harrington, Project Manager, Tasmanian Seafood Industry Council, *Committee Hansard,* 15 July 2015, p. 50.

29 Mr Robert Flanagan, Assistant Branch Secretary, Australian Workers' Union, *Committee Hansard,* 15 July 2015, p. 19; see also p. 23.

30 Dr Adam Main, Tasmanian Salmonid Growers Association, *Committee Hansard* 15 July 2015, pp 25–26.

31 Huon Valley Trade Training Centre, *Submission 4*, p. 3.

7.25 The Australian Workers' Union similarly commented that the Tasmanian salmonid industry supports a well-qualified workforce with staff trained in a wide variety of farm and factory skills.[32]

7.26 The industry has a long-term commitment to the improvement of skills of employees and providing opportunities for young Tasmanians. Dr Main stated:

> …a major initiative of TSGA and its members is to improve VET training in Tasmania, to improve access to apprenticeships and work experience for young Tasmanians. This is all about uplifting skills and providing employment pathways for young regional Tasmanians into our industry.[33]

7.27 Other submitters supported the industry's commitment to improving the skill base of its workforce. Seafood Training Tasmania, for example, stated that:

> …the Tasmanian Aquaculture industry has a long history of taking formal training seriously with over 75% of the current marine operations trained at Certificate 3 and above!…[as this] does not include the many employees holding [other] trade and tertiary qualifications the real number holding Cert 3 and above qualifications is closer to 90%![34]

Training programs

7.28 With the expansion of the industry, and the recognition of the need to ensure a stable and skilled workforce, Skills Tasmania and the Tasmanian Seafood Industry Council developed the Tasmanian Seafood Industry Workforce Development Plan.[35] Training opportunities such as school-based apprenticeships, traineeships, work experience and support for tertiary education are available.

7.29 Seafood Training Tasmania (STT), a not-for-profit registered training organisation, stated in its submission that it now provides 18 nationally-recognised qualifications and has more than 1200 participants annually. Over 60 per cent of enrolments come from the Tasmanian salmonid industry. While its training has mainly been mainly directed at upskilling existing employees, demand has now emerged at four regional Trade Training Centres for Certificates in Aquaculture. Currently, there are 95 school-based students undertaking these qualifications.[36]

7.30 The industry has strong links with the STT with industry representatives sitting on the STT board. In addition, the industry provides access to 'the latest plant

32 Australian Workers' Union, *Submission 5*, p. 9.

33 Dr Adam Main, Tasmanian Salmonid Growers Association, *Committee Hansard* 15 July 2015, p. 26.

34 Seafood Training Tasmania, *Submission 30*, p. 2.

35 Huon Valley Trade Training Centre, *Submission 4*, p. 2.

36 Seafood Training Tasmania, *Submission 30*, pp 2, 3.

and equipment, including vessels and training rooms to enable STT to deliver the right training in the most appropriate region'. The STT concluded that:

> From our observations over the last 3 decades the Tasmanian fin-fish industry has proven itself to be an outstanding example of innovation that has provided significant employment in those areas of Tasmania that need it the most.[37]

7.31 The HVTTC is funded by the Australian Government's Trade Training Centres in Schools Program. Training is delivered under a Partnering Agreement with STT and is supported by industry including Tassal, Huon Aquaculture, Petuna, and Skretting. Representatives of Tassal and Huon Aquaculture sit on the board of HVTTC and assist with the selection and induction of the students into the program, and provide ongoing technical support, training opportunities, site visits, and work-placement opportunities for the students.

7.32 The HVTTC commented that a workforce development model around Australian School-based Apprenticeships has been developed in partnership with the salmonid companies. In its first year of operation, this has been taken up by six students, providing them with work and training while at school, assisting with retention. There is also guaranteed employment at the end of Year 12 and support for tertiary studies as required. This program has now become a model for other industries in Tasmania.[38]

7.33 The HVTTC concluded:

> …the Tasmanian salmon industry is vital to the employment future of Tasmania's young people, particularly in regional areas, and is an internationally recognised model of industry and school partnerships.[39]

7.34 The committee also heard evidence from companies which provide support to the aquaculture industry about the ways in which they are 'investing in youth as future leaders'[40] through the provision of apprenticeships and training. Degree C Pty Ltd indicated that they have 'been able to provide training to our tradespeople and a large number of our 40-plus apprentices'.[41]

7.35 Degree C Pty Ltd also highlighted the importance of the opportunities provided by the aquaculture industry and stated that:

> If the aquaculture industry were to suddenly disappear, the loss would be huge…The opportunity for training and upskilling of tradespeople and

37 Seafood Training Tasmania, *Submission 30*, p. 7.

38 Huon Valley Trade Training Centre, *Submission 4*, p. 3.

39 Huon Valley Trade Training Centre, *Submission 4*, p. 3.

40 Huon Valley Trade Training Centre, *Submission 4*, p. 3.

41 Mr Chris Fontana, Degree C Pty Ltd, *Committee Hansard*, 16 July 2015, p. 27.

> apprentices will be lost, as this industry provides training and learning opportunities that cannot be gained elsewhere.[42]

Conclusion

7.36 The committee recognises the important contribution of the fin-fish aquaculture industry to the economic prosperity of Tasmania. It is providing direct employment opportunities for over 1500 people and more than twice that many people indirectly.

7.37 Significantly, many of those who are employed directly by the industry are working in regional areas. These are areas which have, in the past, suffered as a result of contracting employment opportunities through downturns in traditional industries, notably forestry and mining. With expansion of the industry, greater employment opportunities will become available which the committee considers will further enhance community wellbeing in regional Tasmania.

7.38 The committee saw at first hand, during its inspection of fish pens on the Huon River, the commitment of the industry to supporting local businesses. For example, the large black plastic pipes used in construction of the pens are made by Zest, a company based at Wynyard on the north west coast of Tasmania. This commitment to local businesses creates many additional employment and training opportunities.

7.39 The aquaculture industry requires an appropriately skilled and stable workforce across all areas of activity. The fin-fish companies, and indeed the entire seafood industry in Tasmania, have actively supported training and education programs. These range from upskilling of those already employed in the industry to school-based apprenticeships and tertiary education opportunities. Given the poor levels of educational attainment and literacy in Tasmania compared to the rest of Australia, the contribution and support of the aquaculture industry for education and training is significant. For many young Tasmanians, this provides opportunities which that are not available elsewhere. With the industry continuing to expand, it is expected that further benefits from the skilling of the workforce will emerge.

7.40 It is the committee's view that the success of the fin-fish aquaculture industry is inextricably linked to the future economic prosperity of Tasmania.

42 Mr Chris Fontana, Degree C Pty Ltd, *Committee Hansard*, 16 July 2015, p. 27.

Chapter 8

Possible impact of fin-fish aquaculture on human health

8.1 Some submitters expressed concerns about the possible impact of the fin-fish industry on human health. These concerns can be grouped into two general issues: first, the direct impact of farming operations on residents of nearby communities; and secondly, the possible impact on human health through the consumption of farmed fish.

Impact on nearby communities

8.2 The committee received a number of submissions from local residents in the Huon Estuary and the D'Entrecasteaux Channel areas. Residents pointed to aquaculture activities which, they stated, affected their physical and psychological health and wellbeing. Of particular concern to submitters were night-time disturbances from bright lights used on leases, noise and vibration associated with boat movements and disturbances from trucks on shore.[1]

8.3 Submitters stated that noise arises from a variety of activities on fish farming leases including:

- the operation of special purpose vessels and equipment associated with fish farms;
- barges, service boats, feed supply and support vessels and tugs moving between leases trucks entering and leaving shore based facilities;
- venturation, a process of raising dissolved oxygen (DO) levels in the water for fish health management purposes during the warmer summer months, potentially 24 hours per day;
- air lift, the process of recovering fish from the pens using compressed air lift systems, which is commonly used during emergencies where large numbers of mortalities occur that need to be removed from pens quickly;
- fish feeding where pellets from the feed barge are blown by a compressor along high density polyethylene (HDPE) pipes that run to individual pens;
- pen lighting powered by generators on the farm barge located within the lease, which may be required to operate 24 hours per day depending on environmental conditions; and
- shore facilities and marine traffic associated with leases.[2]

---

1 See Ms Henrietta Manning, *Submission 71*, p. 2; Ms Susan Westcott, *Submission 88*, p. 3; Dr Elizabeth Smith, *Submission 91, p. 7*; Ms Miranda Howie, *Submission 97*, pp 5, 10–16.

2 Doctors for the Environment Australia, *Submission 12*, p. 5; Ms Danielle Cairns, *Submission 36*, p. 2; Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 12.

8.4 Light pollution arises from lighting of farming structures, including fish pens, and boats.

8.5 The *Marine Farming Planning Act 1995* requires a person preparing a marine farming development plan (MFDP) to identify management controls that contain any measure necessary to satisfactorily manage and mitigate the negative effects of the proposal. Management controls may include provisions relating to the restrictions on noise, light or presence in a marine farming zone.[3] Submitters also pointed to the Huon River and Port Esperance MFDP, which states that:

> 3.9.2 Lessees are to ensure that light generated from marine farming operations does not create a nuisance to the general community…
>
> 3.12.2 Lessees must comply with guidelines on noise emissions made pursuant to the *Environmental Management and Pollution Control Act 1994* for marine farming operations.[4]

8.6 However, it was argued by some local residents that these conditions have been ignored; indeed, light and noise from farming operations continue to increase. One submitter from the Huon Estuary stated that the light 'has never been as offensive or obtrusive as it is currently'.[5] Other residents commented on the light and noise from aquaculture operations:

> Ten years ago we bought a magnificent block of land with outstanding views and built a home. We looked across Port Esperance with guaranteed peace and privacy day and night. We were attracted by the 'clean, green image' of this area and impressed with the health benefits and serenity of our land.
>
> We now have lights right though our home at all hours of the night and have had to cover windows to avoid being woken by an ever increasing battery of colour and brilliance. One of our outlooks is across to Bruny Island and up the Channel and this is currently under attack. There will be the cost of more window coverings and a more commercial and ugly landscape developed.
>
> We suffer sleep deprivation. We understand the loss of amenity will affect the sale of our property yet, we were here first. No-one wants to listen, least of all Tassal or Huon Aquaculture.
>
> There is a continual expansion of water traffic with larger, noisier vessels spoiling the tranquillity and creating sailing hazards across this beautiful waterway.[6]

---

3 Tasmanian Government, *Submission 35*, pp 17–18.

4 Ms Danielle Cairns, *Submission 36*, p. 2; see also Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 11.

5 Ms Danielle Cairns, *Submission 36*, p. 2.

6 Mr Lance and Mrs Jennifer Hadaway, *Submission 73*, p. 4.

8.7 Considerable evidence was received by the committee concerning the operation of Huon Aquaculture's well boat, *Ronja Huon*. This boat operates on the Huon River and Cnr Rosalie Woodruff commented that it has a 'very deep, loud and penetrating rumble from its motors, and has extremely bright lights…that are clearly visible from the shore'.[7] It was stated that the *Ronja Huon* operates over extended times and a resident commented:

> While there is undoubted reduced 'towing' noise after the introduction of the well boat, this is not the full story. This boat operates almost 24/7, much more frequently than the previous towing operations. It operates overnight and it has extensive and powerful light generating capacity to allow it to do this. It is often accompanied by two smaller boats equipped with powerful spot lights. Significant light pollution results. Light illuminates the sky, the horizon and bedrooms along the coast. Moonrise, moonlight on the sea, the dawn sky and auroras are obliterated. Flashes of light bright enough to wake residents are frequent occurrences. All this accompanied by the hum of engines.[8]

8.8 The committee also received evidence that ongoing and persistent sleep deprivation suffered by those living close to aquaculture activities has caused mental and physical ill health.[9] The Tasmanian Aquaculture Reform Alliance, for example, submitted:

> Sleep fatigue has consequences also for learning, daytime functioning resulting in impaired judgement, reduced hand to eye coordination, concentration and accidents. This is of particular concerns for residents in the remoter areas of the Huon Valley and Tasman Peninsula who frequently commute long distances to work.[10]

8.9 The Tasmanian Aquaculture Reform Alliance went on to comment that stress and anxiety has been reported by residents in areas close to aquaculture operations.[11] Ms De-arne Webb, a Huon resident, outlined her concerns:

> …I have been suffering for the last 10 months, I would think, with severe depression and anxiety that got so bad due to sleep deprivation, noise, reverberation and light impacting on home and my quality of life and my sanctuary, which is my house.[12]

8.10 Doctors for the Environment Australia (DEA), while noting the concerns of residents, commented that 'overall, the extent of psychological impacts of aquaculture

---

7 Cr Rosalie Woodruff, *Submission 37*, p. 2.

8 Ms Danielle Cairns, *Submission 36*, pp 2–3.

9 Doctors for the Environment Australia, *Submission 12*, p. 5.

10 Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 11.

11 Tasmanian Aquaculture Reform Alliance, *Submission 95*, pp 14–15.

12 Ms De-arne Webb, *Committee Hansard*, 15 July 2015, p. 62.

activities on residents is poorly understood and requires addressing as part of a broad investigation of the impacts of the aquaculture on the health of Tasmanians'.[13]

8.11 Evidence was received that concerns about light and noise have been raised with the relevant companies, local council and the Environment Protection Authority. However, the Tasmanian Conservation Trust commented:

> Attempts to find a solution to this problem by contact with Government agencies and the aquaculture company have apparently been unsuccessful. There is no effective complaints procedure in place that can equitably address this type of issue.[14]

8.12 Ms Christine Materia, Tasmanian Aquaculture Reform Alliance, added:

> I think in the past the industry demonstrated that they were not dealing with the mental health issues around noise in particular. Rather than changing regulations, I think that it would be more for the industry to actually develop internal policies and processes for dealing with those types of issues and responding to the community. There is also a failure of regulatory bodies such as local councils and the EPA to deal with the issues of noise.[15]

Response from industry

8.13 The Tasmanian Salmonid Growers Association (TSGA) responded to evidence concerning the impact of light and noise on behalf of the industry and stated that:

> The industry does not believe it has caused significant modification to the natural environment to the extent suggested in the submission and all companies act within visual and noise guidelines and regulations.
>
> The industry is committed to working with the community through consultation to identify concerns and has a strong track record of being responsive to those concerns.
>
> All companies within the industry have a responsibility to respond to comments of mental and physical harm or illness regardless of the cause. The industry does not accept that assisting residents through these issues is an admission of responsibility or cause but an integral part of being a responsible community member and corporate citizen.[16]

---

13 Doctors for the Environment Australia, *Submission 12*, p. 5.

14 Tasmanian Conservation Trust, *Submission 92*, p. 3; see also Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 12; Ms De-arne Webb, *Committee Hansard*, 15 July 2015, p. 63.

15 Ms Christine Materia, President, Tasmanian Aquaculture Reform Alliance, *Committee Hansard*, 16 July 2015, p. 10.

16 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 13.

8.14 In relation to concerns about the *Ronja Huon*, the TSGA stated:

> The *Ronja Huon* specifically provides [Huon Aquaculture] with the capacity to move offshore and farming at these locations would not be possible without its use and the vessel allows the safe bathing and transport of fish in higher-energy locations.
>
> The 75 metre state of the art vessel is powered by a diesel electric motor that readily complies with the *Environmental Management and Pollution Control (Miscellaneous Noise Regulation) 2014*.
>
> The vessel operates in a designated commercial shipping lane (up the Huon River) and services marine farming sites in the Huon and D'Entrecasteaux Channels.
>
> The Company is of the view that it is using best available technology and employs best practice environmental management to reduce noise emissions to the greatest reasonable extent. In addition, the Company has continued to modify the operation of the vessel as far as possible to limit the impact on residences.[17]

8.15 The TSGA went on to note that 'all companies within the industry have thorough complaint procedures in relation to noise from operations'. The companies also conduct noise monitoring by independent agencies and the regulator in order to ensure all vessels are compliant.[18]

8.16 Huon Aquaculture and Tassal specifically addressed comments in relation to noise from their operations on the Huon River. Huon Aquaculture stated that all of its vessels are tested for noise emissions and those currently used are compliant with the relevant noise regulations. In addition, it noted that it has voluntarily limited towing operations on the Huon River so that all tow vessels are south of Brabazon Point by 9.00 pm each day, except in extenuating circumstances. The number of towing movements have also decreased in this stretch of the river. The reduction in tows has been facilitated by the use of the *Ronja Huon*. This boat is also compliant with the relevant noise regulations.[19]

8.17 Tassal indicated to the committee that it was responsive to community complaints and has a culture of 'beyond compliance'. Noise mitigation strategies include changes to, and replacement of, equipment, limiting towing operations to late afternoon, and adjusting the stocking strategy for the lease, where possible, to minimise the noise impact.[20]

8.18 The committee also received evidence from Dr Steve Carter, an environmental engineer who has worked with Tassal on noise mitigation. Dr Carter

---

17 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 13.

18 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 31.

19 Huon Aquaculture, *Response to Ms Miranda Howie's submission*, pp 4–5.

20 Tassal Group Limited, *Response to Ms Miranda Howie's submission*, p. 2.

commented that Tassal has worked at reducing noise and has 'succeeded in quieting down their marine and noise marine and land facilities'. Dr Carter concluded 'Tassal now has more hands-on noise management experience than just about any other industry in Tasmania'.[21]

Other possible impacts on human health

8.19 A number of submitters commented on the potential for the activities of the aquaculture industry to affect human health through contamination of target and non-target species. In this regard, DEA pointed to the bioaccumulation and contamination of the marine environment with polychlorinated biphenyls (PCBs) and the use of antibiotics.[22]

Polychlorinated biphenyls

8.20 DEA noted that PCBs are 'persistent, cancer-causing chemicals that continue to contaminate the environment and the food supply'.[23] Research from the United States and Canada was cited as demonstrating that PCB contamination of farmed salmon is significant, being much higher than that found in wild salmon. The research suggested that the cause of this contamination is likely a consequence of elevated levels of contamination found in commercial salmon feed.[24]

8.21 Submitters noted that, while studies have been conducted on overseas aquaculture operations, there are no comparable studies of PCB contamination of Tasmanian farmed salmon or trout.[25]

Antibiotics

8.22 Antibiotics are used in aquaculture to treat outbreaks of disease in farmed fish. For example, in 2014, Huon Aquaculture and Tassal treated an outbreak of Yersinia at pens in Macquarie Harbour with antibiotics.

8.23 The Tasmanian Aquaculture Reform Alliance pointed to the large amounts of, and different by types of, antibiotics used in fish farming. It stated that studies indicated that antibiotic residue is present in sediment as well as other fish species near fish farms.[26] Submitters stated that there was a danger to human health from the

21 Dr Steve Carter, *Submission 72*, p. 2.

22 Doctors for the Environment Australia, *Submission 12*, p. 3.

23 Doctors for the Environment Australia, *Submission 12*, p. 3.

24 Doctors for the Environment Australia, *Submission 12*, p. 3; Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 10.

25 Doctors for the Environment Australia, *Submission 12*, p. 4; Tasmanian Aquaculture Reform Alliance, *Submission 95*, p. 10.

26 Tasmanian Aquaculture Reform Alliance, *Submission 95*, pp 10–11.

use of antibiotics both in relation to elevated levels of residue and development of antibiotic resistant bacteria.[27]

8.24 The Tasmanian Conservation Trust argued that the use of antibiotics in food production should be phased out, particularly given the rise of antibiotic resistant bacteria and the implications for human health.[28] The DEA added that overseas studies need to be replicated in Tasmania.[29]

Response from the industry

8.25 The fin-fish industry responded to concerns about antibiotic use and possible PCB contamination on human health from farmed fish. The TSGA noted that 'the industry continues and is committed to producing salmon which is safe and healthy for the consumer and believes that adequate monitoring is undertaken to comply with all food safety regulations'.[30]

8.26 In relation to antibiotic use, the TSGA noted that they are never used prophylactically or for growth promotion. Any salmon that are treated with antibiotics undertake a lengthy withdrawal period to ensure that all residues are cleansed from their system. Any group intended for harvest which falls within a period of twice the stated withdrawal period will undergo flesh testing for antibiotic residue. This complies with the Australia New Zealand Food Standards Code for residue levels.[31]

8.27 The TSGA went on to note that the industry's use of antibiotics is strictly monitored, recorded and regulated and has, in fact, fallen dramatically since 2008–09.[32] The TSGA commented that the reduction in antibiotic use has been achieved through a greater focus on improving knowledge and research activities targeting specific fish health issues.[33] Tassal provided the following explanation of its use of antibiotics:

> Fish are not treated with antibiotics unless they are sick and a bacterial disease is confirmed. Salmon which are treated with antibiotics undergo an extended withdrawal period and are tested for antibiotic residues before harvest. All harvest fish are food safe. Our goal is to continue to reduce antibiotic use by improving fish husbandry through the Zero Harm for Fish

27 See Mr Peter Schulze, *Submission 89*, p. 8; Dr Elizabeth Smith, *Submission 91*, p. 11; Tasmanian Aquaculture Reform Alliance, *Submission 95*, pp 10–11.

28 Tasmanian Conservation Trust, *Submission 92*, p. 5.

29 Doctors for the Environment Australia, *Submission 12*, p. 4.

30 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 12.

31 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 16.

32 Tasmanian Salmonid Growers Association, *Response to submissions*, pp 12, 16; see also Tasmanian Government, *Submission 35*, Appendix 1, p. 25.

33 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 16.

> initiative, and move into preventative approaches for disease management with the use of vaccines.
>
> We have expected that our antibiotic use will now fluctuate around this very low level of use.[34]

8.28 The TSGA commented that the industry's preferred option was vaccination and noted that significant investments have been made into the development of vaccines with some success. However, until vaccines are developed for Tasmanian conditions, antibiotics are still required.[35]

8.29 In addition, the TSGA stated that stock inspections are a routine part of farming activities and focus on disease monitoring and early detection. Companies are also actively involved, along with the Tasmanian Government, in the Tasmanian Salmonid Health Surveillance Program. This program provides passive and active disease surveillance through regular submission of fish diagnostic samples and testing for specific disease agents of concern.[36]

8.30 The Department of Primary Industries, Parks, Water and Environment annual report stated that the Tasmanian Salmonid Health Surveillance Program was revised in 2013–14 by the introduction of company and regional quotas to ensure samples were submitted consistently during the year and for all production zones and compartments. It was stated that 'farm companies were provided with monthly submission statistics and quarterly data based on regional data'.[37]

8.31 Reports of antibiotic use are provided by Huon Aquaculture on its Sustainability Dashboard and by Tassal in its annual Sustainability Report. For example, Huon Aquaculture reported on the use of antibiotics from 2007.[38] Tassal's *Sustainability Report 2014* also reported the use of antibiotics to control an outbreak of Yersiniosis in Macquarie Harbour. This resulted in an increase in antibiotic use in 2013–14 following a decline in previous years. Tassal stated that:

> Fish are currently vaccinated for the disease, but new research efforts in 2015 will be placed into the development of a more efficacious vaccination strategy for all of our sites. This will reduce the need for antibiotics and increase performance and fish welfare.[39]

8.32 In relation to the study cited in the DEA's submission concerning antibiotic residue, the TSGA stated that the study did not include an assessment of Tasmanian

---

34 Tassal Group Limited, *Sustainability Report 2014*, p. 37.

35 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 16.

36 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 16.

37 Department of Primary Industries, Parks, Water and Environment, *Annual Report 2014*, pp 72–73.

38 Huon Aquaculture, *Sustainability Dashboard*, http://dashboard.huonaqua.com.au/

39 Tassal Group Limited, *Sustainability Report 2014*, p. 37.

aquaculture and that 'different growing regions face varying challenges, particularly in regards to antibiotic use'.[40]

8.33 The TSGA concluded:

> As with any animal production, antibiotics may be required in fish farming from time to time, but their role and uses are poorly understood by the general public and easy for critics and observers to interpret in a negative light.[41]

8.34 The committee also notes that a review was undertaken by the Institute for Marine and Antarctic Science (IMAS) in 2009 of ecological impact of the antibiotics and antifoulants used in the Tasmanian salmonid aquaculture industry. The IMAS provided information on the outcomes of the review:

> Current data indicate that water column concentrations of antibiotics are extremely low and consequently impacts on phytoplankton communities are likely to be limited. The testing of wild fish with respect to human health toxicity showed no risk to human health. The review suggested that although major environmental changes are unlikely to have occurred, identification of suitable indicator species would be valuable to ensure ongoing sustainability. It also suggested that where antibiotics are used, a measure of bioavailability rather than simply a measure of total residue level would be preferable, and that the effect of local environmental conditions…on ecotoxicity be assessed.[42]

8.35 The review was followed up by a workshop at which government and industry stakeholders and relevant experts discussed proposed future research.[43]

8.36 In relation to PCBs, the TSGA commented that studies have found that levels of PCBs and dioxins in fish species are low. In addition, the Commonwealth Department of Agriculture conducts an annual national residue survey (NRS) that regularly tests farmed salmon to ensure that they are safe for human consumption. – industry has participated in this for almost a decade. The TSGA added that 'tests in 2014 confirmed that Tasmanian salmon were well within acceptable ranges for a wide range of potential contaminants based on European Union Values and Food Standards Australia New Zealand'.[44]

8.37 The TSGA also responded to comments about contamination of commercial feed, and stated that the Tasmanian salmonid industry does not use feed manufactured in Canada. One company providing feed to the industry, Skretting Australia,

---

40 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 12.

41 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 16.

42 Institute for Marine and Antarctic Studies, *Submission 20*, p. 19.

43 Institute for Marine and Antarctic Studies, *Submission 20*, p. 35.

44 Tasmanian Salmonid Growers Association, *Response to submissions*, pp 12, 16.

undertakes testing to ensure quality. In 2014, all results from Skretting Australia were within the Australian and European limits.[45]

Committee view

8.38 The committee acknowledges the concerns of local residents about the impact of the fin-fish industry on their wellbeing through disturbances from light, noise and vibration and understands the frustrations of individual residents over perceived lack of response to complaints. However, the committee is of the view that there is an adequate regulatory regime in place to address these concerns and considers that residents should seek action through the appropriate regulatory channels.

8.39 While having come to this view, the committee nonetheless considers that the industry must continue to look for ways in which to diminish the impact of light and noise on local residents particularly through changes to farming operations and equipment used.

8.40 In relation to concerns about possible contamination of Tasmania-farmed salmon through antibiotics or PCBs, the committee received no evidence that this is the case. Australia has one of the most strongly regulated agricultural sectors and it would be highly detrimental to the fin-fish industry should there be any doubts about the quality of its product. Further, the committee notes that the industry is funding research to limit the use of antibiotics and is committed to ensuring the health of fish through appropriate farming practices.

Senator Anne Urquhart
Chair

45 Tasmanian Salmonid Growers Association, *Response to submissions*, p. 16.

Government Senators' Additional Comments

Government Senators opposed this inquiry as it was concerned it could be used as a platform for anti-industry attacks.

Government Senators note the Tasmanian Labor Party did not support this inquiry.

Government Senators consider there are appropriate systems and regulatory frameworks in place to support real-time responsive management of the fin-fish aquaculture industry in Tasmania. Government Senators further note evidence of strong environmental sustainability credentials, the socio-economic benefits of the industry, and the success of industry self-regulation in managing environmental impacts.

Government Senators express their disappointment that despite clear evidence of appropriate systems and regulations in place for the fin-fish industry, the industry has been obliged to expend further resources defending its environmental record during this inquiry.

Government Senators note the Australian Government seeks to reduce regulatory burdens on industry, and specifically that current systems and processes in place for the fin-fish industry in Tasmania allow for community consultation. Government Senators therefore do not support Recommendation 2.

Government Senators observe that decisions regarding the allocation of resources by the Tasmanian Government do not fall within the scope of this inquiry's terms of reference; the allocation of resources is complex and not a matter for the Commonwealth. Government Senators therefore do not support Recommendation 3.

Recommendation 1

The Committee acknowledges the more-than-adequate management systems, and effective industry proactivity, in the sustainable management and continuous improvement of the Tasmanian fin-fish aquaculture industry.

Senator Anne Ruston
Deputy Chair
Senator for South Australia

Senator James McGrath
Senator for Queensland

Australian Greens' Dissenting Report

Introduction

1.1 This inquiry was initiated by the Australian Greens as result of whistle-blower(s) bringing to light serious allegations from within the Tasmanian salmonid industry.

1.2 A leaked email, dated September 2014, was tabled in the Tasmanian Parliament in March 2015. This email was sent by the heads of two of the three major Tasmanian salmon farming companies, Huon Aquaculture and Petuna; and was addressed to the Premier, the Minister for Primary Industries and Water, and a number of senior bureaucrats within the Tasmanian Government. Huon and Petuna alleged that the third major salmon farming company in Tasmania, Tassal, was about to breach the biomass cap in Macquarie Harbour; and that the Tasmanian regulator was engaged in 'disingenuous and misleading' conduct and that this was putting at risk both the health of waterways and the future of the industry.

1.3 The leaked email also stated that Huon and Petuna were 'dismayed' by the Tasmanian Government's handling of regulation under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in respect of the Federal Minister's decision on the expansion of salmon farming in Macquarie Harbour. These companies alleged that a clear warning sign that the environment we are growing the fish in is becoming compromised' was being ignored. Huon and Petuna called on the Tasmanian Government to act to protect 'the future of the industry and the Macquarie Harbour environment' as they were 'key drivers for the Tasmania's economy and reputation'.

1.4 The serious allegations in this email, as well as the leaked report into dissolved oxygen levels in Macquarie Harbor, were regarded by the Australian Greens as prima facie evidence that serious problems existed with the current environmental planning and regulatory mechanisms. In particular, they implied the Tasmanian Government was failing in its duty as a regulator, and that individual(s) involved felt the need to blow-the-whistle in order to remedy the situation.

1.5 Unfortunately, the genesis of this inquiry and the exceptionality of the allegations in the leaked email are not adequately conveyed in the report of the Committee. The email is not mentioned until two-thirds of the way through the Committee report, and only then in relation to the alleged breach of the biomass cap, and not in relation to the alleged conduct of the Tasmanian regulator.

1.6 It is also extremely disappointing that the inquiry did not hear direct evidence from the heads of the three Tasmanian salmon farming companies who authored or were named in the leaked email; or from the senior bureaucrats who were recipients of the leaked email and who were responsible for regulating the salmon industry at the time.

1.7 The Committee report notes that the Tasmanian Salmonid Growers Association (TSGA) characterised this email as 'point-in-time' communication and stated that the salmon industry is very united. This evidence, along with the absence of specific company representation at the inquiry, indicates that the industry has closed ranks since September 2014. Whilst this apparent unity has arisen from the scrutiny delivered by this inquiry, there is no way for the committee to ascertain if it is likely to be the case into the future.

1.8 It was evident from submissions to this inquiry, and during the public hearings, that the substantive issues raised in the leaked email, such as the biomass cap in Macquarie Harbour, have not been fully addressed by the Tasmanian government. This is a cause of concern, especially for federal government oversight.

1.9 Unfortunately, while the Committee's report is expansive in its coverage of the inquiry, only three recommendations for change are made and these recommendations are weak. The Committee report's conclusions were firmly in favour of the evidence provided by proponents of the salmon industry, including the Tasmanian Government.

1.10 The Australian Greens are of the view that the weighing of evidence to arrive at the conclusions and (lack of) recommendations of the final report was political. As a result, the Committee report is a missed opportunity to provide constructive advice on how to ensure confidence in the future of the salmon industry in Tasmania. The Australian Greens have sought to remedy this by authoring this dissenting report.

Comments on specific recommendations

Chapter 1: Introduction

1.11 The Australian Greens appreciate the range of issues and concerns raised during this inquiry. The Australian Greens wish to thank the individuals and businesses who invested their time to both make submissions and to provide evidence in person.

1.12 In particular, the Australian Greens want to acknowledge the level of professionalism and co-operation provided by the TSGA during the inquiry. However, as noted above, the Australian Greens felt the absence of representatives from the major Tasmanian salmon farmers detracted from the evidence provided by industry.

1.13 The Australian Greens also wish to state for the record our strong advocacy for community representatives to be afforded an opportunity to present evidence at public hearings.

1.14 Finally, the Australian Greens wish to note a number of positive developments that have already occurred as a result of this inquiry being undertaken. These include the allocation of new resources for scientific research; improvements in the Tasmanian Government's approach to regulations; and improvements by companies in relation to communication.

Chapter 2: Overview of the fin-fish aquaculture industry in Tasmania

International certification of the industry

1.15 The Australian Greens do not believe that third-party certification of the Tasmanian fin-fish industry is sufficiently independent or standardised to be able to support the statement in the Committee report that it 'provides additional confidence to stakeholders'.

1.16 Whilst we commend all attempts to improve management practices, there is not a certification scheme that is accepted as the industry standard. As such, certification is not as meaningful to government or the community as it could be because it does not allow for comparison between operators which, for example, Forest Stewardship Certification provides for timber related products.

Recommendation 1

1.17 Fin-fish farming licensees work together to use a single, independent third-party certification scheme to enable better comparison of the performance of different operators.

1.18 Two of the three aquaculture-specific certifications schemes subscribed to by different members of the Tasmanian fin-fish industry—Best Aquaculture Practices and the Global Salmonid Initiative—were established by and are governed by industry. As such, the claim that these bodies are independent is questionable.

1.19 The third aquaculture-specific certification scheme subscribed to by some in the Tasmanian fin-fish industry—the Aquaculture Stewardship Council (ASC)—has an even split between industry and other parties on its board. The Committee's report notes submissions that state that ASC is considered the most credible certification scheme, including by WWF who are a founding member.

1.20 However, this inquiry did not examine the adequacy of existing third-party certification schemes. This is despite the Australian Greens making repeated requests that WWF appear at public hearings.

Community perception

1.21 The Australian Greens wish to place on record that we are strongly in favour of a sustainable salmon industry in Tasmania. This inquiry was initiated by the Australian Greens, in part, to help ensure a sustainable future for the salmon industry in Tasmania. The Australian Greens believe that this view—that scrutiny is essential to long-term viability—reflects that of a large portion of the community who appreciate that industry needs to be regulated in order to avoid a 'tragedy of the commons'.

1.22 The Australian Greens understand that a more open and transparent approach can be onerous for industry from a cost and compliance perspective, but only in the short-term. A genuine commitment by industry to provide more information to the

community is likely to increase trust in the industry and, in the long-run, make life less difficult for all concerned. The salmon industry uses public waterways, and therefore scrutiny of the industry should be of concern to all Tasmanians.

Chapter 3: Waterway health data

Issues raised in relation to waterway health monitoring

1.23 As detailed in the Committee report, a number of submissions raised specific concerns with the adequacy of monitoring of waterway health. However, these concerns have not been translated into corresponding recommendations by the Committee. As a result, the Committee report fails to satisfactorily address the fundamental issue of waterway health monitoring; and fails to reflect the importance of waterway health monitoring to the sustainability of the environment that supports fin-fish farming.

1.24 The lack of baseline data was consistently raised by submitters as preventing a proper analysis of the environmental impact of fin-fish farming. However, the Australian Greens note that the Tasmanian Government has made progress on this issue.

Recommendation 2

1.25 Comprehensive baseline data in respect of waterway health be gathered and analysed before any fin-fish farming licenses are granted in new areas.

1.26 The frequency and type of monitoring undertaken by fin-fish farmers was also raised by many submitters. In response, the Committee notes that some companies conduct monitoring more frequently than required, often in accord with ASC accreditation requirements. As such, the minimum monitoring requirements should be in accord with high standard accreditation requirements.

Recommendation 3

1.27 Fin-fish farming licenses require water quality sampling to be conducted weekly at a minimum.

Recommendation 4

1.28 Fin-fish farming licenses require water quality sampling to include turbidity.

Recommendation 5

1.29 Fin-fish farming licenses require video monitoring to be conducted quarterly at a minimum.

1.30 The lack of consistency of license requirements was also raised by submitters. Coupled with the ad hoc approach to third-party accreditation, this issue stands as a major impediment to proper evaluation of the conduct of any particular fin-fish farmer.

Recommendation 6

1.31 That consistent waterway health monitoring requirements be applied to all fin-fish farming licenses.

1.32 The Committee report also details the breadth of concerns in respect of the public availability and reporting of waterway health monitoring data. The Committee report makes one, non-specific recommendation in this respect. This recommendation avoids the central issue in relation to the transparency of data: waterway health data is information about the state of public waterways and this data should be assumed to be public data unless there is good reason that it should not be.

1.33 The recommendation of the Committee also fails to reflect contemporary approaches to the public availability of data around monitoring and regulation. Governments the world over are moving towards immediate and unfiltered release of public data to facilitate community involvement.

1.34 The evidence provided by Birdlife Tasmania highlights the imbalance in the current approach to waterway health data. Birdlife Tasmania shares their data on the presence of threatened bird species with industry members and their consultants. However, Birdlife Tasmania have to use Right To Information requests to attempt to access—but not be guaranteed to access—birdlife data collected by industry.

Recommendation 7

1.35 Fin-fish farming licenses require all waterway health monitoring data in respect of public waterways to be publicly released as soon as is practicable.

Chapter 4: Impact of fin-fish aquaculture on waterway health

1.36 The impact of fin-fish farming on the environment is the central issue of this inquiry. The sustainability of the Tasmanian salmon industry depends on waterway health being protected. The profitability of salmon farmers, the people employed in the salmon industry, and the flow-on economic benefits that derive from salmon farming all depend on waterway health being understood and being adequately responded to.

1.37 As noted in the Committee report, the conditions in which salmon is farmed in Tasmania are relatively unusual, especially Macquarie Harbour. These conditions appear to be more susceptible to impacts from fin-fish aquaculture than other salmon farming areas in the world.

1.38 It has been made evident during this inquiry that the impact of fin-fish aquaculture on waterway health has not been conclusively established. Accordingly, the Australian Greens accept that it is difficult for the Committee to make clear statements in relation to the impact of fin-fish aquaculture, particularly given the highly technical nature of much impact assessment. However, this underscores the need to address issues related to waterway monitoring and regulatory oversight to ensure the sustainability of salmon farming in Tasmania. This is particularly so in

relation to Macquarie Harbour where issues relating to the impact of salmon farming on endangered species remain unaddressed.

Recommendation 8

1.39 That a Macquarie Harbour Taskforce be jointly established by the state and federal government.

1.40 Membership of this taskforce should include representatives from industry, community, all levels of government, regulators and academic institutions. The taskforce would bring together the numerous and disparate threads of scientific work being undertaken by industry and various agencies so as to develop a better understanding of the ecological processes within Macquarie Harbour.

1.41 The taskforce would report to the state and federal governments, and would: publish real time updates on work plans and an annual report on the state of the environment of Macquarie Harbour; hold community forums to promote the taskforce's work, advise on gaps in scientific understanding and monitoring efforts; provide regular updates on the dissolved oxygen levels and benthic impacts of the industry; and provide advice on potential improvements to environmental practices.

Marine debris

1.42 As is noted in the Committee report, marine debris collected from salmonid operations has been found to be increasing, particularly plastic rope waste.

Recommendation 9

1.43 Fin-fish farming licensees have identifiable rope so that sources of waste can be clearly identified and monitored.

Recommendation 10

1.44 Fin-fish farming licensees are required to report on the amount of marine debris collected, including that which is attributable to their operations.

Recommendation 11

1.45 The federal government's threat abatement plan for the impacts of marine debris on vertebrate marine life should be updated to include the impacts from fin-fish aquaculture.

Chapter 5: Environmental planning and regulation of the fin-fish industry

Independence of decision making

1.46 The apparent failure of the Tasmanian regulator to properly respond to indications of environmental impacts in Macquarie Harbour was the trigger for two of the three major salmon farmers in Tasmania emailing the Tasmanian Government. Commentary from state parliamentarians that this inquiry was a 'witch hunt' indicates that scrutiny of the Tasmanian Government's actions was not considered welcome or

necessary. However, evidence gathered during this inquiry confirms that there are significant shortcomings in the regulation of fin-fish aquaculture in Tasmania.

1.47 The fundamental issue is that the responsible department has a conflict of interest: DPIPWE is both the promoter of the salmon industry and the regulator of the salmon industry. That a regulator has responsibility for such obviously divergent objectives is untenable and at odds with contemporary governance approaches. The risks associated with the real or perceived lack of independence of the Tasmanian regulator, and conflicting management objectives, were identified as far back as 2004 by the Productivity Commission in its report into Assessing Environmental Regulatory Arrangements for Aquaculture.

1.48 Establishing a regulatory system that is independent from commercial pressures is essential to ensuring that all relevant interests are given due consideration. It is also essential to ensuring community confidence in the long-term sustainability of the salmon industry.

Recommendation 12

1.49 That Environment Protection Authority (EPA) Tasmania is given responsibility for the regulation of fin-fish aquaculture in Tasmania as prescribed by the Marine Farming Planning Act and the Living Marine Resources Management Act.

Marine Farming Planning Review Panel; merit review mechanisms; and lack of integration of planning processes

1.50 As noted in the Committee report, marine aquaculture is managed in a distinctly different manner to terrestrial and riparian land-use planning matters in Tasmania. Decisions relating to the issuance of licenses and conditions for marine aquaculture are not subject to public hearings; are made by the Minister; and are not subject to appeal.

1.51 The inquiry heard evidence detailing the shortcomings with the process, including that it does not provide adequate opportunity for evidence to be presented; does not allow for evidence to be heard in an open forum; does not encourage consistent and precedent-based decisions; and does not provide an avenue for decisions at odds with legislation to be challenged.

Recommendation 13

1.52 The Marine Farming Planning Review Panel (MFPRP) is empowered to issue marine aquaculture licenses and is required to conduct a public decision-making process regarding the consideration of marine aquaculture licenses in accordance with the Resource Management and Planning System.

Recommendation 14

1.53 Decisions of the MFPRP are appealable to the Resource Management and Planning Appeal Tribunal.

Recommendation 15

1.54 The Tasmanian Planning Commission is empowered to make regional plans and provide state-wide guidance for marine aquaculture activities.

Adequacy of resourcing

1.55 Submissions relating to inland waterway health and the impacts from salmonid hatcheries raised serious concerns about the lack of capacity of the Tasmanian EPA to adequately address pollution issues in areas where it currently does have jurisdiction.

Recommendation 16

1.56 The Tasmanian EPA be adequately resourced to carry out all of its regulatory responsibilities in respect of fin-fish farming.

1.57 While adequately resourced government departments are important to ensuring regulations are properly enforced, the community can also play a role in helping inform regulators of potential impacts from industry activity.

Recommendation 17

1.58 The WaterWatch community program is reinstated with specific focus on aquaculture hotspots; and funded through the federal government's National Landcare Programme.

Chapter 6: Interaction of state and federal laws and regulations

Commonwealth regulation

1.59 As noted in the Committee report, the Commonwealth does not have an active role in the regulation of fin-fish aquaculture. Rather, the Commonwealth's role is to protect environmental values identified under the EPBC Act.

1.60 Nevertheless, there are a number of reviews of federal activities that could be undertaken to help ensure the quality of oversight of fin-fish aquaculture in Tasmania.

Recommendation 18

1.61 That a review be undertaken into funding opportunities for fin-fish farming provided by the Fisheries Research and Development Corporation and other federal research partnerships to ensure that adequate environment protection requirements are included.

Recommendation 19

1.62 That a review be undertaken into the potential for the development of National Environment Protection Measures specifically related to fin-fish farming impacts on ambient marine, estuarine and fresh water quality.

Recommendation 20

1.63 That a review be undertaken into the development of Water Quality Improvement Plans through the National Water Quality Management Strategy.

1.64 This last review should specifically address reducing nutrient and other forms of pollution from aquaculture activities. Additionally, consideration should be given to adding Tasmanian aquaculture zones as 'water quality hotspots,' including Macquarie Harbour, and extending the Derwent Estuary zone to include the D'Entrecasteaux Channel.

Expansion of farming in Macquarie Harbour and application of the EPBC Act

1.65 The Australian Greens believe that the precautionary principle should be the foremost consideration for the management of the Tasmanian marine environment. The precautionary principle is central the Federal EPBC Act. There is no better example of a marine environment in which the precautionary principle should be applied than the unique Macquarie Harbour, with the endangered Maugean Skate that resides exclusively in a handful of south-western Tasmanian harbours.

1.66 In relation to salmon farming in Macquarie Harbour, the inquiry heard evidence regarding the impacts on water quality; impacts on the aquatic ecosystem including the benthic environment; and matters of national environmental significance including listed threatened species and world heritage properties.

1.67 The Committee report notes the evidence presented that indicates, prima facie, a breach of conditions set by the Federal Environment Minister in his referral decision on Marine Farming Expansion in Macquarie Harbour. It is essential that this evidence be acted upon to ensure that license conditions for fin-fish farming have not been breached.

Recommendation 21

1.68 That an independent investigation be undertaken into whether the conduct of government and industry has been consistent with the referral decision Marine Farming Expansion, Macquarie Harbour, Tasmania (EPBC 2012/6406) as specified by the Environment Minister under section 77A of the EPBC Act.

Recommendation 22

1.69 That the referral decision Marine Farming Expansion, Macquarie Harbour, Tasmania (EPBC 2012/6406) is reconsidered in accordance with section 78 of the EPBC Act on the basis of emerging evidence regarding dissolved oxygen and nitrate limit levels over the range of depths for which the Maugean Skate is known to inhabit.

1.70 Formal identification of Macquarie Harbour as a critical habitat for the Maugean Skate and formal identification of salmon farming as a threat would precipitate the development of a national threat abatement plan and would further help improve management practices to protect biodiversity, listed species, and other world heritage properties.

Recommendation 23

1.71 The registration and identification of critical habitat for the Maugean Skate be made pursuant to section 207A of the EPBC Act.

Recommendation 24

1.72 The national listing of the environmental impacts of fin-fish farming operations is listed as a key threatening process in the next assessment cycle.

Senator Peter Whish-Wilson
Senator for Tasmania

Appendix 1

Submissions, tabled documents, additional information and answers to questions taken on notice

Submissions

1 Kingborough Council
2 Aquenal Pty Ltd
3 Tasmanian Regional NRM Organisations
4 Huon Valley Trade Training Centre
5 The Australian Workers' Union
6 Aquaculture Stewardship Council
7 Biofouling Solutions Pty Ltd
8 Fisheries Research and Development Corporation
9 Australian Marine Conservation Society
10 Department of Agriculture
11 The D'Entrecasteaux & Huon Collaboration
12 Doctors for the Environment Australia
13 WWF-Australia
14 RSPCA Australia
15 BirdLife Tasmania
16 Marine Solutions Tasmania Pty Ltd
17 Aquadynamic Solutions
18 Skretting Australia
19 Tasmanian Seafood Industry Council
20 Institute for Marine and Antarctic Studies, University of Tasmania
21 G & D Transport Pty Ltd
22 Degree C Pty Ltd
23 Motors Group Tasmania Pty Ltd
24 Scielex Pty Ltd
25 Duggans Pty Ltd
26 Glamorgan Spring Bay Council
27 Roaring Beach Wildlife Rescue
28 RDS Partners Pty Ltd
29 Mr Ken Baker
30 Seafood Training Tasmania (Inc.)
31 IPM Safety
32 Veolia
33 Tasmanian Salmonid Growers Association Ltd
34 Global Aquaculture Alliance
35 Tasmanian Government
36 Ms Danielle Cairns
37 Cr Rosalie Woodruff
38 Dr Imogen Fullagar
39 Mr John Nichols
40 Australian Government Department of the Environment
41 Dover Bay Mussels Pty Ltd

42 Mr David Abbott
43 Mr Bertrand Charron
44 Oysters Tasmania
45 Mr David Wise, SFM Forest Products
46 Mr Fraser Petrie
47 Ms Lois Stubley
48 Mr Nicholas Ash
49 Pennicott Wilderness Journeys
50 Zeehan Hardware
51 Mitchell Plastic Welding
52 Tasweld
53 Fairbrother
54 Total Rubber
55 Rapid Supply Pty Ltd
56 Ms Trish Kyne
57 Ms Vicki O'May
58 Ms Angela Butler
59 Mr David M Mills
60 Mr Donn Umber
61 Regional Development Australia - Tasmania
62 Ridley
63 Backspring Pty Ltd
64 BOC Limited
65 Nets Tasmania
66 Port Esperance Sailing Club
67 Tasmanian Consulting Service Pty Ltd
68 Ms Sarah Lowe
69 Aussie Waste Management
70 EDO Tasmania
71 Ms Henrietta Manning
72 Dr Steven Carter
73 Mr Lance and Mrs Jennifer Hadaway
74 Tasmanian Abalone Council Ltd
75 Huon Resource Development Group Inc
76 Confidential
77 Confidential
78 Confidential
79 Confidential
80 Confidential
81 Confidential
82 Confidential
83 Confidential
84 Confidential
85 Confidential
86 Confidential
87 Ms Chrissie Rowland
88 Ms Susan Westcott
89 Mr Peter Schulze
90 Confidential
91 Dr Elizabeth Smith

92 Tasmanian Conservation Trust
93 Tasmanian Scalefish Fisherman's Association
95 Tasmanian Aquaculture Reform Alliance
96 Dr Greg Phillips
97 Ms Miranda Howie
98 Confidential
99 Confidential
100 Mr Richard Dax
101 Nutreco
102 GLOBALG.A.P.
103 Acoura Marine

Tabled documents

Response to draft amendment Macquarie Harbour Marine Farm Plan 2005 by Mr Ron Morrison, tabled by Environment Tasmania (public hearing, Hobart, 16 July 2015)

Submission on the proposed expansion of salmonid marine farming in Macquarie Harbour by Dr Neville Barrett, tabled by Environment Tasmania (public hearing, Hobart, 16 July 2015)

Quick time movie 'We've all seen what's on the surface. Let's take a look below', tabled by Tasmanian Abalone Council (public hearing, Hobart, 16 July 2015)

Colin Buxton & Associates–Review of the Tasmanian Abalone Council Report on risks to the abalone fishery from further expansion of the salmonid industry (public hearing, Hobart, 15 July 2015)

Additional information

Tasmanian Salmonid Growers Association Ltd (TSGA)–Response to submissions

Mr Geoffrey Swan–Three minute presentation (public hearing, Hobart, 15 July 2015)

Answers to questions taken on notice

Tasmanian Salmonid Growers Association–Answers to questions taken on notice (public hearing, Hobart, 15 July 2015)

Tasmanian Salmonid Growers Association–Answers to questions taken on notice (public hearing, Hobart, 15 July 2015, received 28 July 2015)

Institute for Marine and Antarctic Studies, University of Tasmania–Answers to questions taken on notice (public hearing, Hobart, 15 July 2015)

Department of Primary Industries, Parks, Water and Environment–Answers to questions taken on notice (public hearing, Hobart, 15 July 2015)

Appendix 2
Public hearings

Wednesday 15 July 2015 - Hobart

Department of Primary Industries, Parks, Water and Environment, Tasmania

Dr John Whittington, Secretary
Mr Graham Woods, Acting Manager, Marine Farming Branch
Mr Tony Thomas, Principal Management and Planning Officer, Marine Farming Branch

Kingborough Council

Mr Stephen Wass, Mayor
Mr Gary Arnold, General Manager

The Australian Workers' Union

Mr Robert Flanagan, Assistant Branch Secretary
Dr Julian Amos, Adviser

Tasmanian Salmonid Growers Association

Mr Chris Dockray, Chairman of the Board
Dr Adam Main, Chief Executive Officer

Institute for Marine and Antarctic Studies, University of Tasmania

Dr Catriona Macleod, Deputy Head, Fisheries and Aquaculture Centre
Dr Jeff Ross, Senior Research Fellow

Tasmanian Seafood Industry Council

Mr Julian Harrington, Project Manager

Environmental Defenders Office Tasmania

Ms Jessica Feehely, Principal Lawyer

Mrs Jennifer Hadaway, Private capacity

Mr George Harris, President, Huon Resource Development Group

Ms Miranda Howie, Private capacity

Mr Geoffrey Swan, Private capacity

Ms De-arne Webb, Private capacity

Thursday, 16 July 2015 – Hobart

Tasmanian Conservation Trust

Mr Peter McGlone, Director
Mr Jon Bryan, Marine Campaigner

Environment Tasmania

Ms Rebecca Hubbard, Marine Coordinator

Tasmanian Aquaculture Reform Alliance

Ms Christine Materia, President

Tasmanian Abalone Council Ltd

Mr Dean Lisson, Chief Executive
Ms Avril Brown, Director
Dr Julie Mondon, Scientific Adviser

Aquadynamic Solutions

Dr Neil Hartstein, Project Manager

Marine Solutions

Mr Sam Ibbott, Director

Aquenal Pty Ltd

Mr Sean Riley, General Manager

Duggans Pty Ltd

Mr Alan Duggan, Former Managing Director

Degree C Pty Ltd

Mr Chris Fontana, Divisional Manager

Pennicott Wilderness Journeys

Mr Andrew Hennessy, General Manager

Appendix 3

The regulation of aquaculture in other jurisdictions

1.1 A number of countries, including Norway, Scotland, Canada, New Zealand and some states of the United States of America (US), have established legislative frameworks governing the planning and regulation of the aquaculture industry. Like Australia, aquaculture regulations differ between states and provinces in both Canada and the US.[1]

Norway

1.2 Finfish farming in Norway is regulated by the Aquaculture Act 2005 (Norway). The purpose of the Act is to:

> …promote the profitability and competitiveness of the aquaculture industry within the framework of a sustainable development and contribute to the creation of value on the coast.[2]

1.3 The Aquaculture Act 2005 (Norway) focuses on the growth and innovation of the aquaculture industry, simplification of the approval process, protection of the environment and consideration of other users of the coastal zone.[3] It establishes a licensing system, and broadly applies to issues such as environmental standards, land utilisation, registration, transfer and mortgaging of licences, as well as control and enforcement.[4]

1.4 New aquaculture applications are made to the Directorate of the Regional Fisheries Office. Upon approval, the applications are sent to regional authorities such as the County Governor, the Norwegian National Coastal Administration, the

---

1 Ministry for Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 4.

2 Food and Agriculture Organization of the United Nations, Fisheries and Aquaculture Department, *National aquaculture legislation sector overview – Norway*, http://www.fao.org/fishery/legalframework/nalo_norway/en (accessed 8 July 2015).

3 Ministry for Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 4.

4 Food and Agriculture Organization of the United Nations (FAO), Fisheries and Aquaculture Department, *National aquaculture legislation sector overview – Norway*, http://www.fao.org/fishery/legalframework/nalo_norway/en (accessed 8 July 2015).

Norwegian Food Safety Authority, Municipality, and the Norwegian Water Resources and Energy Directorate.[5]

1.5 The Directorate of Fisheries decides when licences for marine aquaculture are to be allocated, and the geographical distribution of aquaculture projects. When licences are to be made available, the Directorate makes a public announcement seeking applications.[6]

1.6 The Directorate can limit the number of licences that are allocated in a watercourse, or allocate licences within a particular total breeding biomass that is set for a watercourse. The Directorate of Fisheries can also limit the number of allocated licences at the national, regional or local level, in order to ensure that the industry develops in a controlled manner, taking into consideration environmental consequences, the public right of access to and right to passage through the countryside (public right of access), as well as the interests of other industries. Sea ranching licences are also allocated in a coordinated manner and the Directorate determines the time for the allocation of the licences.[7]

1.7 An Environmental Impacts Assessment (EIA) is required prior to the approval of new large farms[8] and compliance with best practice management is achieved through regulatory measures with environmental monitoring requirements set at the local and regional scale. Local environmental requirements are based on the level of impact and exploitation of the site, whereas regional environmental monitoring requirements are set at the discretion of the local authority.[9]

Scotland

1.8 Governance of the aquaculture industry in Scotland is complex, with over 60 pieces of relevant legislation and 10 different statutory authorities. The two primary pieces of legislation are the Marine Act 2010 (Scotland) and the Aquaculture and Fisheries Act 2007 (Scotland).

---

5 Ministry for Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 4.

6 Food and Agriculture Organization of the United Nations, Fisheries and Aquaculture Department, *National aquaculture legislation sector overview – Norway*, http://www.fao.org/fishery/legalframework/nalo_norway/en (accessed 8 July 2015).

7 Food and Agriculture Organization of the United Nations, Fisheries and Aquaculture Department, *National aquaculture legislation sector overview – Norway*, http://www.fao.org/fishery/legalframework/nalo_norway/en (accessed 8 July 2015).

8 $\geq$48000 m^3 for movable pens or $\geq$36000 m^3 for permanently fixed pens.

9 Ministry for Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, pp 4–5.

1.9 The key points of the Marine Act 2010 (Scotland) relevant to the regulation of the aquaculture industry are:

(a) a statutory requirement to develop regional marine plans that will facilitate the sustainable management of the marine area; and

(b) a simplified licensing system that allows aquaculture consents to be granted by regional authorities or the government.

1.10 At present, Local Authorities deal with applications for new aquaculture sites through the terrestrial planning process, with advice from statutory consultees and any representations from other interested parties such as wild fish interests and the general public. Decisions now also have to give regard to the Scottish National Marine Plan and future regional marine plans.[10] Marine and terrestrial development plans must jointly identify areas which are potentially suitable, and sensitive areas which are unlikely to be appropriate for such development, reflecting Scottish Planning Policy and any Scottish Government guidance on the issue.[11]

1.11 The Town and Country Planning (Marine Fish Farming) (Scotland) Regulations 2013 also require that, before granting planning permission, there must be consultation with the following bodies:

(a) the planning authority for the marine planning zone in which the marine fish farm is situated;

(b) where the operation of the marine fish farm is likely to affect marine waters in another marine planning zone, the planning authority for that marine planning zone;

(c) Scottish National Heritage; and

(d) the Scottish Environmental Protection Agency.[12]

1.12 The Scottish National Planning Policy (the Policy) also sets out the Government's planning guidelines regarding aquaculture. It states that the planning system should support a sustainable and diverse aquaculture industry that is competitive and viable, whilst still having due regard for the marine environment.[13]

1.13 The Policy also sets out guidelines for local development plans including the making of positive provision for aquaculture developments, and setting out the issues

---

10 Marine Scotland, *Scotland's National Marine Plan*, March 2015, p. 52, http://www.gov.scot/Resource/0047/00475466.pdf (accessed 29 July 2015).

11 Marine Scotland, *Scotland's National Marine Plan*, March 2015, p. 50, http://www.gov.scot/Resource/0047/00475466.pdf (accessed 29 July 2015).

12 The Town and Country Planning (Marine Fish Farming) (Scotland) Regulations 2013, s. 3.

13 The Scottish Government, *Scottish Planning Policy*, p. 56, http://www.gov.scot/Resource/0045/00453827.pdf (accessed 29 July 2015).

that will be considered when assessing aquaculture proposals. These issues may include:

(a) impacts on, and benefits for, local communities;

(b) economic benefits of the sustainable development of the aquaculture industry;

(c) landscape, seascape and visual impact;

(d) biological carrying capacity;

(e) effects on coastal and marine species (including wild salmonids) and habitats;

(f) impacts on the historic environment and the sea or loch bed;

(g) interaction with other users of the marine environment (including commercial fisheries, Ministry of Defence, navigational routes, ports and harbours, anchorages, tourism, recreational and leisure activities); and

(h) cumulative effects on all of the above factors.[14]

1.14 It also states that where applications are made, they should be supported, where necessary, by sufficient information to demonstrate:

(a) operational arrangements (including noise, light, access, waste and odour) are satisfactory and sufficient mitigation plans are in place; and

(b) the siting and design of cages, lines and associated facilities are appropriate for the location. This should be done through the provision of information on the extent of the site; the type, number and physical scale of structures; the distribution of the structures across the planning area; on-shore facilities; and ancillary equipment.[15]

1.15 Approval of new large finfish farms (>100t/yr, or >1000m^2) or farms located in a sensitive habitat also require the completion of an EIA.[16]

1.16 Management of disease and parasitic infections is a major focus of Scottish aquaculture legislation with regular monitoring conducted by the Fish Health

14 The Scottish Government, *Scottish Planning Policy*, p. 57, http://www.gov.scot/Resource/0045/00453827.pdf (accessed 29 July 2015).

15 The Scottish Government, *Scottish Planning Policy*, p. 57, http://www.gov.scot/Resource/0045/00453827.pdf (accessed 29 July 2015).

16 Ministry for Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 5.

Inspectorate (FHI). The FHI has the power to prevent movement of diseased stock, specify control measures, or order the culling of diseased stock.[17]

Canada

1.17 Aquaculture in Canada is governed at both the federal and provincial level and is regulated by several pieces of legislation. At the federal level, aquaculture is governed by the Fisheries Act 1985 (Canada) and the Species at Risk Act 2002 (Canada) which protects wild species and their habitats; and the Navigable Waters Protection Act 1985 (Canada) which governs maritime safety issues.[18]

1.18 Prior to 2012, the majority of new aquaculture developments were required to conduct an Environmental Assessment (EA) under the Canadian Environment Assessment Act 2012 (Canada) prior to gaining an approval for an aquaculture development. However, an amendment to the Act removed the federal requirement for an EA for aquaculture developments though EAs may still be required by provincial governments.[19]

1.19 Prior to 2012, the federal Fisheries Act 1985 (Canada) primarily focused on any 'harmful alteration, disruption or destruction of fish habitat'. This historical legislation only considered the local and small-scale effects which could be practically monitored and these were used as proxy measures for identifying large-scale effects. In 2012 a review of the regulatory framework refocused assessments on identifying large-scale effects.[20]

1.20 A Decision Support System (DSS) is now used in Canada to assess both potential far-field and near-field effects of new aquaculture developments, and to reduce subjectivity and inconsistencies found between environmental assessments. The DSS develops a cumulative score based on a series of questions and aquaculture applications are rated as 'acceptable, provisionally acceptable or unacceptable.' It assumes that far-field impacts exist, but does not quantify them, and it seeks to

17 Ministry for Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 5.

18 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 6.

19 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 6.

20 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 6.

position fish farms at a distance from any features which may be adversely affected by the development.[21]

1.21 Once a new aquaculture development receives approval, an operating licence from the relevant provincial government must also be obtained. The provincial government is responsible for ensuring that aquaculture operations comply with both federal and provincial regulations, and they are also responsible for conducting site inspections.[22]

New Zealand

1.22 Aquaculture in New Zealand is regulated by the Resource Management Act 1991 (NZ) and the Aquaculture Reform (Repeals and Transitional Provisions) Amendment Act 2011 (NZ).[23]

1.23 Prior to 2004, the approval process for new aquaculture projects was a two-step process with local regional councils being responsible for granting 'resource consents' and the Ministry of Fisheries providing marine farming permits.[24]

1.24 In 2004, the Aquaculture Reform Act 2004 (NZ) created a single, process for granting aquaculture consents and aimed to 'enable the sustainable growth of aquaculture and ensure the cumulative environmental effects are properly managed while not undermining the fisheries regime or Treaty of Waitangi settlements'. The Act stated that finfish farms were only permitted in Aquaculture Management Areas (AMA) designated by local regional councils. However, due to complications with the process of creation of AMA, very few aquaculture projects were approved.[25]

1.25 In 2011, the Aquaculture Reform (Repeals and Transitional Provisions) Amendment Act 2011 (NZ) repealed the requirement that finfish farms be located in designated AMA. In addition, applications can be made to the Environmental

---

21 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 6.

22 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 6.

23 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 9.

24 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 9.

25 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 9.

Protection Authority for plan changes or concurrent resource consents if producers wish to locate farms in areas prohibited by coastal management plans.[26]

1.26 The Resource Management Act 1991 (NZ) requires an Assessment of Environmental Effects and a resource consent/coastal permit from the relevant regional council or unitary authority for all new aquaculture developments. In order to obtain a resource consent, public consultation is required which can include both submissions and public hearings.[27]

1.27 Once a resource consent has been obtained, the Ministry for Primary Industries has responsibility for assessing the project to ensure it will not have any Undue Adverse Effects on recreational, customary or commercial fishing. Should a project be found to have Undue Adverse Effects, compensation must be paid to the affected parties.[28]

1.28 New Zealand does not have any regulations or standards governing the environmental monitoring of aquaculture projects. Each individual resource consent stipulates the size and location of the farm, the production limits, and environmental monitory and compliance requirements. Some consents utilise broader industry standards while some use standards that are specific to their regional council as regional councils are responsible for ensuring compliance.[29]

Issues common across jurisdictions

1.29 Across all these jurisdictions there are a number of common issues which arise in the licencing and monitoring of aquaculture projects. In particular, regulation of the industry is achieved through multiple pieces of legislation involving regulatory authorities at both federal and regional levels of government. There are also often difficulties in promoting and supporting a viable aquaculture industry whilst simultaneously maintaining environmental integrity and the social expectations of other users of the water space.

1.30 In New Zealand, the requirement for public consultation on individual aquaculture resource consents has also led to lengthy and costly delays to applicants.

---

26 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming,* MPI Technical Paper No: 2013/47, 2013, p. 10.

27 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming,* MPI Technical Paper No: 2013/47, 2013, p. 10.

28 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming,* MPI Technical Paper No: 2013/47, 2013, p. 10.

29 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming,* MPI Technical Paper No: 2013/47, 2013, p. 10.

Additionally, the lack of designated areas for aquaculture has impeded the expansion of the aquaculture industry.[30]

1.31 Scotland sought to remedy both the complex application process, and the lack of designated aquaculture water space, with the Marine Act 2010 (Scotland) which now requires authorities to create marine development plans where aquaculture is permitted. This has significantly lessened the time and costs associated with applications as environmental impact assessments and public consultation requirements for these areas are significantly reduced.

1.32 Each jurisdiction has also sought to develop mechanisms for monitoring and reducing environmental impacts through both voluntary best management practices and mandatory regulations.

30 Ministry of Primary Industries (NZ), *Comparison of the international regulations and best management practices for marine finfish farming*, MPI Technical Paper No: 2013/47, 2013, p. 11.