

***Draft Amendment No. 3 to the Storm Bay off Trumpeter Bay,
North Bruny Island Marine Farming Development Plan July
1998***

Report of the Marine Farming Planning Review Panel

August 2018

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I INTRODUCTION

I.1 Purpose of Report

This report sets out the matters considered by the Marine Farming Planning Review Panel (the Panel) in making its determination, under section 41 of the *Marine Farming Planning Act 1995* (the Act) in relation to a proposed amendment to the *Storm Bay off Trumpeter Bay, North Bruny Island Marine Farming Development Plan July 1998* (the Plan).

The Panel determined to modify the draft amendment under section 41(2)(b) of the Act.

In accordance with section 41(3)(a), the Panel modified the Draft Amendment. The Panel determined under section 37(3) that the modification to the draft amendment was not of a substantial nature.

Having modified the Draft Amendment, the Panel continued its consideration of the Draft Amendment under section 41 of the Act and determined, in accordance with section 41(2)(a), to recommend to the Minister that the draft amendment, as modified, be accepted without change.

I.2 Structure of Report

Section 1 of this report provides background and contextual information.

Section 2 covers the legislative requirements relevant to the Panel's recommendation. In particular, the requirements of sections 21 and 22 of the Act are examined.

Section 3 focuses on the key issues identified in the Draft Amendment and Environmental Impact Statement (EIS) accompanying the Draft Amendment, and sets out the conclusions drawn by the Panel.

Section 4 sets out the recommendations of the Panel, in relation to the Draft Amendment.

Appendix A contains the Statement of Reasons, and the modified draft amendment.

Appendix B provides details of the Panel.

I.3 Background

A detailed chronology of the planning process is provided in the Panel's statement of reasons for its determination in Appendix A.

On 10 August 2017, the applicant, Huon Aquaculture Company Pty Ltd (the applicant), requested under section 33 of the Act, that the Plan be amended.

On 29 August 2017 the Panel met with representatives of the applicant to discuss the proposal.

The Panel considered the draft amendment and the Environmental Impact Statement (EIS) in accordance with Section 35(3) of the Act on 17 October 2017.

The proposed amendment seeks to extend the Plan area to create a new marine farming zone ('Zone 5 – (Yellow Bluff)') with a maximum leasable area of 230Ha; and to extend the Plan area to modify four existing marine farming zones 1, 2, 3 and 4 – (south of Trumpeter Bay) by increasing the maximum leasable area from 50 to 75Ha for each zone, and rotating the zones by 18 degrees clockwise. The proposed amendment would increase the leasable area for salmonid farming operations within Storm Bay by 330Ha.

The applicant prepared an environmental impact statement (EIS) to accompany its request for an amendment to the Plan. This EIS accompanied the Draft Amendment prepared by the Planning Authority (PA). The EIS provided a description of the proposed amendment. It contained a description of existing environmental conditions, an assessment of the potential effects on those conditions as a consequence of the Draft Amendment and the proposed operations. It proposed mitigation measures and identified any likely residual effects after mitigation.

On 13 November 2017, the Minister approved the public exhibition of the Draft Amendment. The PA publicly exhibited a copy of the Draft Amendment, together with the EIS, between 18 November 2017 and 17 January 2018.

Following the approval of an extension by the Panel, the PA forwarded a report to the Panel on 7 May 2018 in accordance with section 40 of the Act, advising that twenty-six (26) submissions were received in relation to the Draft Amendment, including twenty-five (25) which met the requirements of a 'representation' under section 39 of the Act. Ten (10) representors also requested a hearing pursuant to section 39(2)(c) of the Act.

On 16 May 2018, the Panel held public hearings pursuant to section 12 of the Act. Five (5) representors presented at a hearing.

Following the hearing the Panel met on 9 August 2018 and considered the Draft Amendment, the section 40 report and information presented at the hearing.

On 9 August 2018 the Panel determined to modify the draft amendment under section 41(2)(b) of the Act.

In accordance with section 41(3)(a), the Panel modified the Draft Amendment. The Panel determined under section 37(3) that the modifications to the draft amendment were not of a substantial nature.

Having modified the Draft Amendment, the Panel continued its consideration of the Draft Amendment under section 41 of the Act and determined, in accordance with section 41(2)(a), to recommend to the Minister that the draft amendment, as modified, be accepted without change.

1.4 Legislative Changes – *Finfish Farming Environmental Regulation Act 2017*

Since the draft amendment was approved for exhibition, the *Finfish Farming Environmental Regulation Act 2017* has commenced. The *Finfish Farming Environmental Regulation Act 2017* amends several Acts relating to the management of finfish farming activities, including the *Marine Farming Planning Act 1995*, and establishes Tasmania's *Environmental Management and Pollution Control Act 1994* (EMPCA) as the primary piece of environmental regulation legislation for finfish farming. While the Secretary, DPIPWEE retains a significant regulatory role in marine farming, the changes establish the legal structure that empowers the Director, EPA with an independent statutory role for the environmental regulation of the State's finfish farming industry. The new arrangements also include a new Environmental Licence under Tasmania's *Environmental Management and Pollution Control Act 1994* (EMPCA). Any individual marine farming operation will now be regulated by two licences, an Environmental Licence issued under the EMPCA, and a Marine Farming Licence issued under the *Living Marine Resources Management Act 1995*.

A number of changes to existing management controls and the management controls in the draft amendment are required to reflect the new regulatory environment and responsibilities. This is discussed further in section 3.4.8 of this report.

1.5 Role of the Marine Farming Planning Review Panel

The Panel is a statutory body established by the Act.

In summary, the role of the Panel in relation to an amendment to a marine farming development plan is to:

- approve or refuse the making of an amendment to a marine farming development plan;
- in approving the making of an amendment, seek the approval of the Minister to direct the PA to prepare the draft amendment;
- determine whether the draft amendment is suitable for exhibition;
- where suitable, certify the draft amendment accordingly and refer it to the Minister for approval for it to be publicly exhibited;
- consider the draft amendment; the report of the PA, containing a copy of representations received in relation to the draft amendment; a copy of any requests for hearings; a statement of the PA's opinion as to the merit of each representation; a statement regarding the need for any modification of the draft amendment in the light of any representation, and the impact of any representation on the draft amendment as a whole; and any appropriate recommendation in relation to the draft amendment;
- make a determination to recommend to the Minister that the draft amendment be accepted without change; or modify the draft amendment; or direct the PA to modify the Draft Amendment; or recommend to the Minister that the draft amendment be rejected.

The Panel is also required to conduct a hearing if a request is made under section 39(2)(c) of the Act. Members of the Panel are listed in Appendix B.

1.6 Context

The Panel noted several contextual issues in its consideration of the Draft Amendment, the EIS prepared by Huon Aquaculture Company Pty Ltd, the report prepared by the PA pursuant to section 40 of the Act and the representations made at the hearing. The Panel also sought and was provided with additional information from the EPA on:

- environmental monitoring;
- triggers and responses to on and off lease issues, and compliance with current regulatory conditions;
- the current Regulatory capacity to manage and respond to environmental performance issues.

The Draft Amendment is one of three separate marine farming development proposals received for Storm Bay from each of Tassal Operations Pty Ltd, Petuna Aquaculture Pty Ltd and Huon Aquaculture Company Pty Ltd. In combination, the companies have aspirations to expand the salmonid production in Storm Bay to a maximum of 80,000 tonnes/yr. However, in recognition that scientific information is not currently available to predict the environmental effects of this level of production, each proposal considers the potential environmental effects of a combined level of production of 40,000 tonnes/yr. This represents an increase of approximately 24,000 tonnes in annual production in Storm Bay. The Panel noted that the Director, EPA has advised that the staging of salmon farming development in Storm Bay will be capped at an initial 30,000 tonnes/yr. The Panel further noted that this cap will be reached progressively over a number of years from the date of any approval.

A Marine Farming Development Plan (MFDP) is a planning instrument that designates areas where marine farming may occur in State waters, and hence provides for the allocation of marine farming leases.

In setting out zones in which marine farming can take place, a MFDP also contains management controls considered necessary to satisfactorily manage and mitigate any effects of marine farming activities that may occur in those designated zones and the adjacent environment.

The approval of a development plan or an amendment to a plan is not an approval for a particular marine farming operation which may be subsequently licenced to occur within the zones approved by the plan.

On 4 December 2017, the *Finfish Farming Environmental Regulation Act 2017* took effect. The new arrangements include a new Environmental Licence under Tasmania's *Environmental Management and Pollution Control Act 1994* (EMPCA). Any individual marine farming operation will now be regulated by two licences, an Environmental Licence issued under the EMPCA, and a Marine Farming Licence issued under the *Living Marine Resources Management Act 1995*.

Regulatory controls stipulated by licence conditions are the primary instrument regulating allowable production levels and operational practices in the zones designated by the MFDP. Licence conditions provide for the regulators of the Industry (the Secretary, DPIPWE and the Director, EPA) to apply adaptive management principles to mitigate adverse environmental impacts. EMPCA provides the Director, EPA with a range of enforcement powers and tools in relation to compliance with any issued Environmental Licence.

However, whilst the licences are the primary tool for regulating a specific marine farming operation within an MFDP zone, the Panel must also consider whether the management controls set out in the MFDP are likely to be sufficient to mitigate potential adverse effects of marine farming operations in the approved zones. Under the Act, the Secretary, DPIPWE has a range of enforcement powers in relation to compliance with management controls contained in the MFDP.

This draft amendment allows for expansion of finfish farming within the Plan area and, by virtue of that, within Storm Bay. The Panel has noted limitations of the currently available science relating to nutrient inputs and biogeochemical processes in Storm Bay. These limitations have also been acknowledged by the PA and the EPA, who have proposed an adaptive management framework in recognition of the gaps in knowledge about how the environment will respond to increased levels of production. The proposed adaptive management approach would be underpinned by:

- licence conditions imposed by the EPA through an environmental licence under EMPCA;
- establishment by the EPA of environmental standards / guideline limit levels and performance indicators for water quality;
- a staged development approach initially capped at 30,000tpa overseen by the EPA;
- a comprehensive environmental monitoring program (including near-scale, intermediate and broad-scale monitoring) overseen by the EPA. The Panel noted that this is a significant intensification of monitoring effort and views this as providing the necessary temporal and spatial resolution upon which to base adaptive management responses; and
- the development of a biogeochemical model, to help to interpret the information provided by the environmental monitoring and the effects of any changes to farming operations in the region.

The Panel further noted the following:

- increased resourcing of the EPA to ensure regulatory capacity;
- the continued support by the DPIPWE Marine Farming Branch in transition to regulation under the *Finfish Farming Environmental Regulation Act 2017*; and
- the consultative development of the comprehensive environmental monitoring program, with engagement across the EPA, DPIPWE Marine Farming Branch, and industry representatives.

The Panel was satisfied that under the enhanced adaptive management framework and administrative arrangements, any environmental effects caused by marine farming operations undertaken in accordance with the MFDP can be effectively detected and mitigated to avoid serious or irreversible impacts on the environment.

The Panel highlighted the need for caution to be taken in expanding production towards the proposed cap, while further research is undertaken, particularly the development of the biogeochemical model and the benthic assimilative capacity of Storm Bay. This is discussed further in relevant sections of the report.

2 REQUIREMENTS OF THE ACT

2.1 Sections 21 and 22 of the Marine Farming Planning Act 1995

A draft amendment to a marine farming development plan must comply with certain legislative requirements. Section 32(2) of the Act provides that an amendment to a marine farming development plan:

- (a) must comply with sections 21 and 22; and
- (ab) must not extend the area to which the plan applies in relation to finfish farming so as to include an area of State waters, or an area that adjoins State waters, that is within a finfish marine farming exclusion zone under section 19A; and
- (ac) must contain any matter relating to environmental management of finfish farming that the Director, EPA, in a notice under section 17A(1), requires the Panel to include in the draft amendment or any draft amendment; and
- (b) must not delete a marine farming zone from the plan; and
- (c) must not reduce the maximum leasable area within a marine farming zone; and
- (d) must not have the effect of making existing marine farming in the area significantly less viable.

In considering the Draft Amendment, the Panel was required to evaluate whether it met these requirements in making its determination.

Pursuant to section 21(1) of the Act, a draft marine farming development plan must:

- (a) further the objectives of resource management within the area covered by the draft plan; and
- (b) designate any area as a marine farming zone within the area covered by the draft plan; and
- (ba) specify the area to which the marine farming development plan relates; and
- (c) be co-ordinated with any marine farming development plan applying to any adjacent area; and
- (ca) if it relates to finfish farming, contain any matter relating to environmental management that is required by the Director, EPA, in a notice under section 17A(1), to be contained in the marine farming development plan or any marine farming development plan; and
- (d) have regard for the use and development of the region as an entity in environmental, economic, recreational and social terms; and
- (e) seek a co-ordinated approach with respect to any matter affecting adjacent land under the jurisdiction of the Marine and Safety Authority or council; and
- (f) have regard to the biological and physical requirements of fish species to be farmed in that area; and

(g) provide for any other matter which this Act requires to be included in a marine farming development plan; and

(ga) be consistent with State Policies made under section 11 of the State Policies and Projects Act 1993; and

(h) contain any matter the Panel requires.

Pursuant to section 22(1) of the Act, a draft marine farming development plan must not prevent the use of any water within a lease area unless the lessee and the Minister agree:

(a) to compensation; or

(b) to an alternative lease area.

The Panel is satisfied that the Draft Amendment complies with the relevant requirements of sections 21 and 22 of the Act as discussed hereunder.

2.2 Resource Management Objectives

Section 21(1)(a) of the Act requires that a draft marine farming development plan must further the objectives of resource management within the area covered by the plan.

The Act is part of the Resource Management and Planning System of Tasmania (RMPS), and as such, needs to further the objectives of the RMPS. The objectives of the RMPS are:

(a) to promote the sustainable development of natural and physical resources and the maintenance of ecological processes and genetic diversity; and

(b) to provide for the fair, orderly and sustainable use and development of air, land and water; and

(c) to encourage public involvement in resource management and planning; and

(d) to facilitate economic development in accordance with the objectives specified in paragraphs (a), (b) and (c); and

(e) to promote the sharing of responsibility for resource management and planning between the different spheres of Government, the community and industry in Tasmania.

The Act also contains a set of objectives relating to resource management. The purpose of this Act is to achieve well-planned sustainable development of marine farming activities having regard to the need to:

a) integrate marine farming activities with other marine uses; and

b) minimise any adverse impact of marine farming activities; and

c) set aside areas for activities other than for marine farming activities; and

d) take account of land uses; and

e) take account of the community's right to have an interest in those activities.

The Panel's consideration of the Draft Amendment, in regard to these objectives, is set out below.

Overall, the Panel concluded that the requirements of section 21(1)(a) of the Act have been satisfied.

2.2.1 Promote sustainable development

The Panel is satisfied that the draft amendment provides for the sustainable development of natural and physical resources, and the maintenance of ecological processes that safeguard the life-supporting capacity of ecosystems, and avoid or remedy or mitigate adverse effects of activities on the environment.

In making its determination, the Panel has considered both the draft amendment, as well as two other proposals for marine farming activities within Storm Bay, including a new draft plan (*Draft Storm Bay North Marine Farming Development Plan, November 2017*), and a draft amendment (*Draft Amendment No. 5 to the Tasman Peninsula and Norfolk Bay Marine Farming Development Plan, November 2005*).

The Panel wrote to the previous Minister for Primary Industries and Water, Jeremy Rockliff, on the 27th April 2017 in regard to its preliminary consideration of the EIS submitted by Tassal Operations Pty Ltd. The Panel raised its concern that there appears to be limited science currently available to support the proposition that 40,000 tonnes of production within Storm Bay is sustainable and will not result in unacceptable environmental impacts. The Panel recommended that the PA engage with the EPA, industry proponents and scientific research organisations to develop a plan to integrate the following components into the planning process for all proposed salmonid farming developments within Storm Bay:

- Development of a full biogeochemical model for Storm Bay;
- Staged approach to reaching 40,000 tonnes of production (to be managed by way of Total Permissible Dissolved Nutrient Output) within Storm Bay; and
- Development of a Broadscale Environmental Monitoring Program (BEMP).

As set out in this report, the Panel considered a range of issues relating to the potential effects of the addition of a new marine farming zone and the concomitant additional leasable area for marine farming in Storm Bay. The Panel concluded that such an expansion is sustainable, conditional on it being supported by the adaptive management approach described in this report. In this regard, the Panel is of the view that the adaptive management approach provides a mechanism to enable farming to proceed in a precautionary manner. The Panel noted the co-ordinated approach that has been applied to the assessment and mitigation of environmental impacts through the use of co-ordinated nutrient dispersion modelling; the inclusion of a Total Permissible Dissolved Nutrient Output limit for Storm Bay; and the proposed BEMP and Biogeochemical Modelling that will inform on-going adaptive management of salmonid production in Storm Bay.

2.2.2 Provide for fair and orderly development

The Panel is satisfied that the draft amendment provides for the well-planned development of marine farming activities in Storm Bay, taking account of other uses and objectives. However, in consideration of other marine farming activities in Storm Bay, caution must be exercised given the absence of a biogeochemical model to inform the nutrient assimilation capacity of the system and the linkages between the Derwent Estuary and lower D'Entrecasteaux.

In making its determination, the Panel has considered both the draft amendment, as well as two other proposals for marine farming activities within Storm Bay, including a new draft plan, and a draft amendment.

2.2.3 Encourage public involvement in resource management and planning and take account of the community's right to have an interest

The process prescribed in the Act for consideration of the draft amendment encourages public involvement and takes account of the community's right to have an interest in the sustainable development of marine farming activities. The Panel is satisfied that public involvement in its consideration of the draft amendment was encouraged through the representation and hearing process.

Additionally, the Panel noted that the applicant consulted with a range of stakeholders in the development of the draft amendment and EIS. The Panel also noted that some representors raised concerns about the adequacy of public consultation and the planning process to encourage public involvement in the planning. These issues are discussed in sections 3.4.5 and 3.4.1 of this report. The Panel formed the view that the requirements of the Act were met in relation to the planning process and public consultation. The Panel does not, however, make comment on the effectiveness of the consultation undertaken by the applicant to address individual concerns.

2.2.4 Facilitate economic development

The proposal is likely to cause a direct increase in employment in the region as well as increased employment and economic productivity within supporting and downstream industries.

According to the EIS, the proposed development would employ 55 new full-time equivalent positions with the potential for a further 85 full-time equivalent positions to be indirectly employed within the local community and aquaculture service industry (building on current direct employment of 25 people and estimated indirect employment of 130 people).

While the Panel has not evaluated these figures, it accepts the proposition that an increase in production will result in economic benefits for the region and the State.

2.2.5 Promote sharing of responsibility for resource management and planning

The Panel is satisfied that the draft amendment and the process prescribed in the Act for its consideration, promote the sharing of responsibility between the different spheres of government, the community and industry in Tasmania. By the nature of the provisions in the Act, the draft amendment has been prepared in a collaborative fashion between the applicant and the planning authority, and the community has been provided with an opportunity to comment on the proposal (refer to sections 3.4.1 and 3.4.5 for discussion of issues raised).

2.2.6 Integrate marine farming activities with other marine uses

The Panel is satisfied that the draft amendment provides for the well-planned, sustainable development of marine farming activities in Storm Bay, having regard to the need to integrate marine farming activities with other marine uses.

As discussed in section 3.3.2 of this report, navigational issues have been taken into consideration in the preparation of the draft amendment. Other marine use aspects have been discussed in Sections 3.3.5 Commercial fishing, 3.3.6 Recreational fishing, and 3.3.7 Recreational activities.

2.3 Use and development of the region as an entity

Section 21(1)(d) of the Act requires that a draft marine farming development plan has regard for the use and development of the region as an entity in environmental, economic, recreational and social terms.

The EIS identified a range of issues that were each taken into consideration by the Panel in making its determination (see Section 3 Key issues). On this basis, the Panel is satisfied that the requirements of section 21(1)(d) of the Act have been satisfied.

2.4 Coordinated approach with the Marine and Safety Authority or Council

Section 21(1)(e) of the Act requires that a draft marine farming development plan must seek a coordinated approach with respect to any matter affecting adjacent land under the jurisdiction of the marine and safety authority or council.

The Panel noted that in preparing the draft amendment and its EIS, the applicant consulted Marine and Safety Tasmania (MaST), Kingborough Council and Huon Valley Council.

In its EIS, the applicant states that its consultation with MAST and Tasports influenced the location of the proposed lease site to maximise navigational safety.

The Panel also noted that the PA, in making its recommendations to the Panel in its Section 40 Report, consulted with MAST and the Australian Maritime Safety Authority (AMSA).

On this basis, the Panel is satisfied that the requirements of section 21(1)(e) of the Act have been satisfied.

3 KEY ISSUES

This section of the report considers several key issues that arose in the EIS, through representations and the hearing process. Several issues were directly related to the Panel's consideration of the Draft Amendment to the development plan. Others related to the effects of farming operations as a consequence of the granting of marine farming leases within the designated zones within the development plan. Several other issues were raised which related to processes or other concerns that are outside the scope of the Act. Where this was the case, the Panel has included the issue in its report, as well as indicated that the matter is out of scope.

This section of the report focuses on key issues and does not seek to address every issue identified, or duplicate information or analyses contained in the EIS or the Section 40 Report, both of which are publicly available.

The key issues have been grouped into those relating to the proposed amendment description; the impacts on the natural environment; those relating to impacts on the human environment; and other matters.

This section provides background information on each key issue, a discussion of the relevant matters, and (where relevant) the conclusion of the Panel.

3.1 Issues relating to the proposed amendment description

3.1.1 Infrastructure and servicing

3.1.1.1 Background

Representors raised concerns relating to perceived infrastructure and servicing issues including: the potential for species escapes arising from infrastructure malfunction; marine debris originating from proposed operations that included visual amenity and increased plastic in the marine environment; and the potential for infrastructure breakdown in the exposed location.

The Section 40 report of the Planning Authority recommended that the draft amendment be modified to:

- Strengthen management controls to provide additional, specific management controls relating to marking and monitoring of marine farming equipment to assist in the management of marine debris; and
- Include requirements for verification that the lessee has appropriate systems, capabilities and equipment to both minimise the risk of infrastructure failures and ensure appropriate response capability in the event of a failure.

3.1.1.2 Discussion

Marine debris

The Panel acknowledged the potential risks to navigation arising from infrastructure that is lost from a marine farming zone.

Additionally, the Panel acknowledged the concerns of representors about marine debris causing environmental harm. Notwithstanding the recognised risk of micro-plastics to the biological environment, the Panel were of the view that larger marine debris originating from marine farms does not pose a significant threat to the marine environment. The Panel noted that industry had the capability to remove marine debris in the event of any loss of infrastructure.

The Panel noted the existing management controls contained within the Marine Farming Development Plan relating to marine debris (3.12.3, 3.12.5 and 3.12.6) and species escape (3.11.1, 3.11.2 and 3.11.3). The Panel also noted the broad powers under draft control 3.01 contained in the draft amendment requiring that lessees must comply with any written direction given by the Secretary. In addition, the Panel noted powers under Section 94 of the *Marine Farming Act* that allow for infringement notices and demerit points for failure to adhere to marine debris controls.

The Panel considers that the modifications recommended by the PA should be made in recognition of:

- The *Sustainable industry growth plan for the salmon industry* which includes an action to adopt a 'zero tolerance' approach to marine debris and related boating safety issues through the planned introduction of best practice tracking technologies and simple ways to identify the source of debris; and
- The proposed scale of the development, the level of exposure of the site and potential for serious environmental harm in the event of catastrophic failure of systems or equipment.
- The PA having consulted with MAST, AMSA and the EPA in forming its recommendations to the Panel.

While the issue of larger (markable) marine debris is adequately covered, the Panel noted that marine debris, particularly debris of a small nature, may constitute an environmental nuisance.

The Panel noted the Government's 'zero tolerance' approach to marine farming debris and the specific provisions of the *Marine Farming Planning Act 1995* relating to requirements for the location of marine farming equipment (s94) and penalties associated with contravention of a marine farming development plan, or a condition of marine farming lease (s91). The PA has advised the Panel that enforcement of the 'zero tolerance' approach to marine farming debris will be undertaken by authorised officers (within DPIPWE and MAST) in accordance with these provisions.

The Panel also noted that industry have improved the traceability and marking of gear, undertaken to continue voluntary shoreline surveys and maintains a marine debris hotline.

Species escape

With regard to species escape, concerns have been expressed in terms of:

- Establishment of feral populations of Atlantic salmon;
- Impacts on native fish populations through either predation or competition for resources;
- Disease/parasite transfer from farmed fish to native populations; and
- Disease/ parasite transfer between escaped fish and farmed fish contained within marine farms.

The Panel noted that farming of salmonids in Tasmania commenced in the 1970s and that to date there has been no evidence of the establishment of feral populations of Atlantic salmon. This is despite the fact that there have been numerous attempts to establish self-supporting populations of both Atlantic and Pacific salmon for recreational fishing purposes¹.

The Panel noted research that had been conducted to understand the feeding habits of escaped salmon in Tasmania. While more research is required to better understand this, results to date suggest while some fish appear to survive, the majority of escapees do not appear to thrive in the wild². Work to date has concluded that escapees are also subject to high levels of capture by recreational fishers and are thus unlikely to have a significant impact on the natural ecosystem.

The Panel noted the risk of disease transfer from farmed salmon to wild fish is very low, however there is the possibility that it may occur. There is also a risk that escaped salmon may be a cause of pathogen transfer to salmon contained within farms (Murray et al. 2010³). Therefore, adequate infrastructure design and servicing is also relevant from a biosecurity management perspective.

3.1.1.3 Conclusion

The Panel has modified the management controls by including additional management controls 3.12.11, 3.12.12, 3.12.13, 3.12.16, 3.12.17, 3.12.18 and 3.12.19; editing existing management control 3.12.5; and deleting management control 3.8.1.3, and replacing it with management control 3.12.14 (see Attachment A of Appendix A). These modifications relate to the marking and monitoring of marine farming equipment, and engineering and infrastructure management systems, capabilities and equipment. With regard to section 37(3) of the Act, the Panel does not consider these modifications to be of a substantial nature.

3.1.2 Stock husbandry aspects

3.1.2.1 Background

Representors raised concerns about fish feeding and fish health, including the potential for fish feed components to impact on human health; the potential for uneaten feed to be consumed by wild fish (having effects on wild fish behaviour, health, reproduction or ecology); and use of antibiotics.

An issue raised at one of the hearings and not addressed in the applicant's EIS concerned the fate of wild fish that are trapped in fish pens, during bathing and harvesting.

3.1.2.2 Discussion

Human health

Human health issues associated with the consumption of farmed seafood are beyond the scope of marine farming planning processes.

¹ Clements (1998). Salmon in the Antipodes – A history and review of trout, salmon and char and introduced coarse fish in Australasia, pp.387, Self-published by John Clements

² Abrantes et al. (2011). Do exotic salmonids feed on native fauna after escaping from aquaculture cages in Tasmania, Australia? Canadian Journal of Fisheries and Aquatic Sciences, vol. 68: 1539-1551;

³ Murray et al. (2010). Epidemiological investigation into the re-emergence and control of an outbreak of infectious salmon anaemia in the Shetland Islands, Scotland, Diseases of Aquatic Organisms, 91: 189-200.

Wild fish health

With regard to wild fish health, feed inputs to the marine environment are regulated under existing management controls 3.2.1 – 3.2.8 which provide for regulatory limits to be imposed on feed/nutrient inputs, indirectly restricting the total amount of feed available for scavenging wild species. They also create a strong economic incentive for operators to minimise feed wastage. The management controls also provide for regulatory action where significant biological impacts are identified. Further, draft management control 3.01 (contained in the draft amendment) requires an operator to comply with any direction given by the Secretary. This gives the Secretary a broad power to apply regulatory approaches as considered necessary.

The Panel noted that there has been a significant decrease in feed wastage as companies have adopted and innovated feed technology and systems. This includes a shift from previous best practice monitoring of feed losses through the bottom of the cage, to monitoring of fish behavioural cues, which results in timelier cessation of feeding. In its EIS, the applicant used an estimate of uneaten feed of 3% of total feed inputs in its calculation of farming emissions.

The Panel formed the view that current levels of food loss were unlikely to form a significant source of food to wild populations and was unlikely to affect the ecology of wild populations.

Trapped Wild Fish

Advice received by the Panel indicates that there are incidences of wild fish species being trapped in pens. The Department has advised that permits have been issued to companies to enable the collection of wild fish to verify the approximate numbers and which species of wild fish are being trapped in pens, as well as their fate. The Panel is not in a position to comment on the potential impact on wild populations in the absence of this information.

Farmed fish welfare

The Panel accepts that in Tasmania, salmon farming is conducted to a standard that conforms to International best practice in relation to farmed fish welfare.

With regard to concerns about overcrowding, the plan contains existing environmental controls relevant to carrying capacity and stocking density. Management controls 3.3.1–3.3.3 relate to management of stocking densities and potential environmental effects from proposed activities. These include the setting of maximum stocking densities (25kg/m³) and a requirement for the lease holder to maintain records demonstrating that maximum stocking densities have not been exceeded (daily basis).

Section 42Z of the *Environmental Management and Pollution Control Act 1994* (EMPCA) provides the EPA with powers to direct a lessee in regard to the amount of finfish that may be produced and biomass held under an environmental licence.

The Panel noted that maximum stocking density set by management controls fell within international best management practice guidelines⁴ and is supported by empirical research such as Turnbull et al (2005)⁵. However, the general practice in Tasmania is for routine stocking of pens to be below a maximum stocking density of 15kg/m³. Additionally, the applicant proposed a stocking density of 8-10kg/m³ in its EIS. In recognition of this, the Panel has modified management control 3.3.1, reducing the maximum permissible stocking density from 25kg/m³ to 15kg/m³.

The use of antibiotics in marine farming is discussed further in section 3.2.8 Chemicals of this report.

3.1.2.3 Conclusion

The Panel considered the issues raised by representors in relation to stock husbandry and formed the view that they are adequately managed through existing management controls and the broader regulatory framework for finfish aquaculture.

The Panel modified management control 3.3.1, reducing the maximum permissible stocking density from 25kg/m³ to 15kg/m³. With regard to section 29(3) of the Act, the Panel does not consider the modification to be of a substantial nature.

3.1.3 Decommissioning and rehabilitation

3.1.3.1 Background

Representors raised concerns that there are inadequate regulatory requirements for decommissioning and rehabilitation.

3.1.3.2 Discussion

The removal of marine farming equipment and fish from an area is required under section 71 of the *Marine Farming Planning Act 1995*. Under section 71, the person who is a holder of a lease (or permit under the *Living Marine Resources and Management Act 1995*) is required to remove, within a specified period, any equipment, debris and fish stock resulting from the occupation of that area by the holder or a sub-lessee. Furthermore, under section 72, if a person fails to comply with section 71, the Minister, without notice may seize any marine farming equipment, debris or fish stock within the area referred to and any reasonable costs incurred by the Minister in exercising power under section 72 are recoverable from the person who held the lease or permit.

The Draft Amendment also contains management controls (3.12.1 and 3.12.5) that require lessees or sub-lessees to comply with the *Marine Farming Planning Act 1995* and remove redundant, dilapidated or loose marine farming structures and equipment from a lease area and State waters as directed by the Secretary, respectively.

With respect to environmental remediation after cessation of marine farming activities, the Panel noted the *Finfish Farming Environmental Regulation Act 2017* now leverages off Section 44 of EMPCA that can require the Director, EPA to impose a remediation and/or monitoring plan that allows for the completion of required works at the cost of the operator where that operator is not in a position to complete such. The Panel has proposed an additional management control (3.12.20) to ensure clarity on this point.

⁴ Sim-Smith, C. & Forsythe, A. (2013). Comparison of the international regulations and best management practices for marine finfish farming MPI Technical Paper No: 2013/47, National Institute of Water & Atmospheric Research Ltd.

⁵ Turnbull, J. et al. (2005). Stocking density and welfare of cage farmed Atlantic salmon: application of a multivariate analysis. *Aquaculture* 243: 121-132.

3.1.3.3 Conclusion

The Panel considers that there are adequate regulatory requirements for decommissioning and rehabilitation, however the Panel has modified the draft amendment to include additional management control 3.12.20 to provide greater clarity.

3.2 Impacts on the Natural Environment

3.2.1 Water Quality

3.2.1.1 Background

Representors were generally concerned about the potential for cumulative effects of all three Storm Bay proposals to impact on water quality in Storm Bay.

Representors raised concerns about potential impacts on water quality in Storm Bay as well as its connected embayments (e.g. Fredrick Henry Bay, Norfolk Bay and other small embayments fringing Storm Bay) and the Derwent Estuary. These concerns centred on the potential for increased nutrient loads to cause eutrophication leading to environmental harm including impacts to wild fish and shellfish habitats, in particular, reef habitat, as well as impacts to seagrass and macroalgae such as giant kelp. Concern was also raised that increased nutrient levels and oxygen depletion caused by consequent algal blooms, could lead to mobilisation of heavy metal contaminated sediments in the Derwent Estuary; and that increased nutrient levels could cause an increase in the prevalence of harmful algal blooms causing impacts to wild fisheries.

Concerns were also raised about the availability and suitability of data to adequately characterise baseline conditions and predict changes resulting from increased nutrient loads in Storm Bay. Some representors were concerned that the use of steady-state model conditions did not allow for dynamic events such as storm events to be assessed, for example, modelling of the potential for resuspension of nutrient enriched sediments or bottom water during storm events.

Some representors emphasised their support for production levels to be regulated through a Total Permissible Dissolved Nitrogen Output (TPDNO) cap and for the establishment of an environmental monitoring program and biogeochemical model. They also emphasised that proposed development stages should be tied to achievement of milestones indicating that the development is sustainable.

3.2.1.2 Discussion

The Panel noted that the Plan sets out existing management controls to manage and mitigate the potential impacts of marine farming on water quality. The relevant management controls are 3.1, 3.2.1-3.2.8, 3.3.1-3.3.7, 3.4.1, 3.4.5-3.4.10, 3.6.1 and 3.6.5. These management controls provide for regulatory controls to:

- limit nutrient inputs;
- adjust permissible stocking density;
- require environmental monitoring, assessment, audit and review; and
- regulate waste streams to the environment such as black and grey water.

The Panel noted that the management controls are part of the adaptive management framework that has been adopted for both enabling and regulating the salmonid industry in Tasmania. Changes made to the regulatory framework in December 2017 include the provision of powers for the Director EPA to directly regulate finfish farming impacts to the environment, including the issuing of environmental licences under EMPCA. The Panel noted that the transition to environmental Licences is in the initial stages and the EPA has adopted the current licence conditions used by the DPIPWE Marine Farming Branch. These will be reviewed and updated over time. The DPIPWE Marine Farming Branch continues to support the EPA during the period of transition. The Panel noted the significant increase in environmental monitoring underpinning the adaptive management approach that will allow for timely identification of issues such that mitigations can be determined.

Nutrient inputs

An expansion in marine farming will involve an increase in nutrient inputs (nitrogen and phosphorus) to Storm Bay. Marine environments are generally taken to be nitrogen limited, and hence nitrogen is the more important nutrient with respect to eutrophication. This underpins the use of a Total Permissible Dissolved Nitrogen Output (TPDNO) limit to manage potential nutrient impacts to the environment.

Information presented in the EIS and by the PA makes reference to biomass production as a unit of reference in the context of limiting dissolved nitrogen output from marine farming activities. These values are indicative only and are used to illustrate relative levels of dissolved nitrogen output. This approach has been taken, in recognition that dissolved nitrogen is relatively abstract, to help readers by providing a more tangible unit of reference. This has led some representors to focus on the 'food conversion ratio' (FCR) used to equate dissolved nitrogen output with biomass production. However, aside from the purpose of illustration, this ratio is immaterial to the quantities of nitrogen that have been modelled. The existing (and proposed) management framework is that nitrogen output is limited, based on feed inputs.

The Institute for Marine and Antarctic Studies (IMAS) has used a dispersion model (CONNIE3) to investigate the fate of nutrients across Storm Bay at a combined interim target production level of 40,000 tonnes/yr (noting that an initial conservative cap on production in Storm Bay of 30,000 tonnes/yr will be imposed by the Director, EPA until such time that additional environmental monitoring and modelling studies confirm that finfish farming in Storm Bay at that level is sustainable and can potentially support a higher level of production). The results, included as an attachment to the applicant's EIS, showed the highly dispersive nature of Storm Bay and suggested that there are temporal differences in dispersion likely resulting from seasonal variations in hydrodynamics and temporal differences in farm inputs relating to feed input requirements across the production cycle. The modelling also suggested that dispersion is reduced with depth.

In relation to the assertion of some representors that there will be increased deep water nutrient loads to the lower reaches of the Derwent Estuary as a result of this and other proposals in Storm Bay, the Panel noted that the dispersion modelling presented in the EIS specifically considered bottom water nitrogen emissions across a depth range of 15-28m (indicative of bottom waters) that were equivalent to 10% of the total emissions. The modelled outputs did not predict a significant exchange of ammonia into the Derwent at this depth. (Note that according to the South Eastern Tasmania Contour Map 1:25000 available on the LIST Map, the very deepest part of the Derwent Estuary is 45m – just off Rosny Point Reserve, however the vast majority of the estuary has a maximum depth of 30 m).

IMAS stated that the modelling is only indicative of the system conditions and as such, caution is required when interpreting the results. IMAS reports that the estimates of connectivity are likely to be fairly reliable as the hydrodynamic patterns in Storm Bay are reasonably well understood and well represented in the model, however a greater level of model validation is required, in particular, where predictions relate to biological outcomes or interactions.

The preliminary dispersion modelling contained in the EIS was parameterised using data from the literature and advice from local marine ecologists and modelling experts. However, limitations of the currently available data relating to biogeochemical processes in Storm Bay have been acknowledged by the PA and the EPA.

The PA and the EPA have proposed an adaptive management framework in recognition of the gaps in knowledge about how the environment will respond to increased levels of production. The proposed adaptive management approach would be underpinned by:

- Licence conditions imposed by the EPA through an environmental licence under EMPCA;
- Establishment by the EPA of environmental standards / guideline limit levels and performance indicators for water quality;
- A staged development approach overseen by the EPA;
- A comprehensive environmental monitoring program (including near-scale (lease-specific), intermediate and broad-scale monitoring) overseen by the EPA; and
- The development of a biogeochemical model, to interpret the information provided by the environmental monitoring and the effects of any changes to farming operations in the region.

In relation to the TPDNO limit, the EPA sets this limit in accordance with responsibilities under EMPCA. The EPA has indicated that initial TPDNO limits will be conservative and the development staged towards this limit, recognising that scientific information is not currently available to predict the environmental effects of high levels of production.

Harmful Algal Blooms

IMAS have reported that the incidence of harmful algal blooms (HABs) in waters off the east coast of Tasmania have increased markedly as a result of rising sea temperatures in this region, driven by a southerly extension of the east Australian current. IMAS report that the increased prevalence of HABs poses a significant risk to salmonid aquaculture on the east coast of Tasmania⁶. However, there is no evidence to suggest that nutrients generated from marine farming has caused an increase in the prevalence of HABs on the east coast of Tasmania.

A study undertaken in Scotland which reviewed the interaction between fish farming and algal communities of the Scottish waters concluded that it is very unlikely that fish farming would have a large-scale impact on the occurrence of harmful algal blooms, particularly on toxic algae⁷.

⁶ Macleod, C. et al. (2016) Institute for Marine and Antarctic Studies University of Tasmania Submission to the Marine Farming Planning Review Panel Independent Assessment of salmon farming at Okehampton Bay.

⁷ Rydberg, L. et al. (2003) The Interaction between Fish Farming and Algal Communities of the Scottish Waters - a Review. Report to Scottish Executive. Environment Group Research Report 2003/04.

In its EIS, the applicant states that it will undertake daily monitoring of the farm-based water column, which will include monitoring for toxic algae and jellyfish. Additionally, the broadscale environmental monitoring program (BEMP) that will be used to inform the development and management of the expansion in Storm Bay will include phytoplankton (community composition and abundance) sampling, and as such, will have capacity to detect HABs and associated environmental conditions (both natural and anthropogenic).

Freshwater resources are discussed in section 3.3.9 Land use and development.

3.2.1.3 Conclusion

The Panel was not convinced that the evidence presented in the EIS was sufficient to demonstrate the extent of likely nutrient enhancement in Storm Bay from farming operations, or the nature and extent of the effects of such enhancement. The Panel accepted that uncertainties can, to a large extent, be dealt with through an adaptive management approach. However the Panel recommends conservative staging of the development to allow for development of both scientific knowledge and regulatory standards to ensure issues are identified and responded to in line with the objectives of the Act.

The Panel noted that the applicant will be required to participate in a BEMP, as well as compliance monitoring and highlighted the importance of including water quality and physico-chemical monitoring, commensurate with potential risks at various operational phases. Further discussion of this is provided below (section 3.2.2 Substrates and fauna).

3.2.2 *Substrates and fauna*

3.2.2.1 Background

Representors were concerned that solid waste deposition (from food waste and fish faeces) could result in impacts to marine fauna through reduced dissolved oxygen concentrations, nutrient enrichment and potential effects on the benthic environment. Some representors were concerned that there is insufficient data and information about rocky reefs and benthic habitats to determine baseline conditions for ongoing monitoring. Some representors considered that solid waste should be collected to be disposed of on land, rather than allowed to discharge to the marine environment.

3.2.2.2 Discussion

Established industry practices manage feed and faeces waste impacts to substrates through the following means as outlined in the applicant's EIS:

- site selection to avoid sensitive receptors being located below or immediately adjacent to the lease area, and to maximise waste dispersion;
- production and fallowing cycles tailored to the dispersive and assimilative characteristics of the lease area;
- feed system optimisation to minimise feed waste;
- stocking density management;
- optimised bio-fouling management to reduce waste discharge resulting from net cleaning activities, including avoidance of the use of anti-foulant paint on fish pens; and
- monitoring of visual, physico-chemical and biological indicators underneath and adjacent to the lease area in order to detect impacts and take appropriate actions if impacts are detected.

Finfish farming interacts with the ecosystem through water quality, the benthos and physical presence of equipment, nets, fish and feed. Existing management controls contain measures to limit the extent of each of these interactions, as well as to monitor impacts and apply management responses. The relevant management controls are 3.1, 3.3.1-3.37, 3.4.1-3.4.10, 3.6.1-3.6.5, 3.12.4. These management controls provide for regulatory controls to:

- limit significant visual, physio-chemical or biological impacts at or extending 35m from the boundary of the lease area;
- monitoring of environmental parameters within the lease area, 35m outside the lease area and at control sites;
- set maximum permissible stocking density, and provision for the regulator to alter it at any time should he/she consider it appropriate;
- require fallowing of farmed areas;
- set a minimum distance of 1m between the finfish cage net and the seabed (however the Panel noted that in the proposed zone the distance will be much greater);
- set baseline environmental survey requirements for lease areas prior to the commencement of marine farming operations in order to determine any licence conditions that may be required to manage environmental values;
- require the keeping of production records for each lease area, including stocking density, feed, chemical and therapeutant inputs and mandatory reporting when required by the regulator;
- require environmental monitoring, assessment, audit and review; and
- establish controls for managing waste from operations and harvesting; as well as removal of fouling organisms from marine farming infrastructure.

These management controls are part of the adaptive management framework that includes a BEMP and development of a biogeochemical model to inform management decisions about appropriate levels of farming in Storm Bay. The Panel noted, however, that much of the current understanding and management of marine farm impacts in Tasmania is based on research derived in estuarine or shallow water environments which are adapted to cope with variations in nutrients. Research is needed to confirm that this is applicable to Storm Bay, a relatively stable open water environment.

The importance of inshore and deep-water reefs is highlighted in a suite of research, existing and ongoing, that considers the potential effects of finfish farming on receiving ecosystems and/or target wild species. The outcomes of this work will be used to inform ongoing adaptive management. This work includes research as part of the Fisheries Research and Development Corporation (FRDC) project 2015-024 “Managing ecosystem interactions across differing environments: building flexibility and risk assurance into environmental strategies”, to specifically consider the potential for interactions between salmon farming and local fringing reefs, risk appropriate monitoring strategies and to identify potential indicators of adverse impacts. This project is due for completion at the end of 2018 and it is the Panel’s understanding that publications associated with the research as well as the final reports will be made publicly available. The Panel expects that the findings of this project will assist the design and implementation of reef monitoring for Storm Bay.

The Panel noted FRDC 2017-215 will develop a full biogeochemical model for Storm Bay and undertake data collection and observational research that will inform the nutrient assimilation capacity of Storm Bay. The Panel has confirmed via discussions with the EPA and operators that, should the results of this project indicate that the proposed production levels exceed the assimilation capacity of the Storm Bay system, then this will be managed via the existing management controls and the Environmental Licences to ensure appropriate production limits are applied. The Panel further noted the intention to establish a BEMP for Storm Bay.

The Panel noted a concern raised by a representor that the stocking density of 25kg/m³ was too high and should be changed to 8-10kg/m³ (reflecting the stocking density proposed by the applicant in its EIS) as a way of managing potential effects on substrates and fauna. The Panel noted that the primary tool for regulating nutrient inputs was to manage biomass limits through the TPDNO limit. Stocking density has also been discussed in section 3.1.2 Stock husbandry aspects of this report.

Baseline information

Baseline information on benthic habitats and rocky reefs in Storm Bay and adjacent embayments includes comprehensive habitat mapping to 40m depth and extensive sampling on the Bruny coast under FRDC 2015-024. Lease-specific baseline information will be collected and analysed prior to the commencement of marine farming operations on any proposed marine farming lease areas.

Ongoing monitoring

The Panel noted the consultative approach between the Planning Authority and EPA taken to develop an integrated monitoring program that includes broad, intermediate and near (lease-specific) scales. Proponents will be required to participate in this monitoring program.

The proposed Storm Bay environmental monitoring program will be designed to achieve a comprehensive spatial and temporal assessment of the broadscale effects on the marine environment as well as lease specific baseline surveys and ongoing compliance monitoring. Throughout the operation of the lease, benthic conditions are monitored after fallowing and prior to re-stocking pens to maintain acceptable environmental standards. The lease-specific monitoring will be aligned to operational cycles, in particular, year class grow out and fallowing, and includes pre-stocking video surveys and peak-biomass benthic surveys (biological, physico-chemical and video). Peak-biomass monitoring will also include assessment of water quality within and outside the lease area. The environmental monitoring requirements are overseen by the EPA.

This monitoring program represents a significant intensification and broadening of environmental monitoring obligations and a progression from escalation of monitoring based on identified issues to a more pro-active program. The Panel considers this a critical element for sustainable industry growth.

Transparency is an important aspect of environmental monitoring and the Panel has noted the adoption by operators of *inter alia* a sustainability scorecard to inform interested stakeholders. The EPA has also provided significant information on their website, including determinations and reports. There has also been a recent update to the public planning and land information website 'The List' to include a map layer of EPA Regulated Premises which includes information about finfish farming including the operator and the associated Environmental Licence⁸.

The Panel supports all endeavours by operators and the Regulator to increase transparency in the salmon industry as endeavours that will improve community acceptance of marine farming in Tasmania.

⁸ ListMap data layer 'EPA Regulated Premises', Metadata ID: 427c061e-3b80-4d01-b17e-73b70591884b

Waste Capture Systems

Regardless of the efficacy or otherwise of waste capture systems, the Panel noted that these were not applicable to a high energy site. The Panel further noted that environmental emissions were not only in solid form but in dissolved form and these would be managed via the TPDNO limit.

3.2.2.3 Conclusion

The Panel noted the environmental licence conditions relating to the maintenance of on and off lease standards in relation to benthic impacts. Appropriate head of power exists under the management controls for the Director EPA to act in response to identified issues.

The Panel formed the view that the direct effects of solid waste deposition on the benthic environment and fauna will be limited in spatial extent and can be sustainably managed through fallowing. The Panel was satisfied that the adaptive management framework underpinned by the BEMP, provided an ability to detect and address adverse environmental effects in a timely manner so as to avoid serious environmental harm. See also section 3.3.5 Commercial fishing and section 3.3.6 Recreational fishing of this report.

3.2.3 *Marine Vegetation*

3.2.3.1 Background

Representors raised concerns about the potential for increased nutrient loads to lead to algal overgrowth/biofouling and shading which leads to loss of seagrasses and macrophyte communities, and the potential for solid waste deposition to impact on marine fauna and flora survival.

3.2.3.2 Discussion

Marine farming operations have the potential to impact on marine vegetation depending on the siting of those operations. Impacts are identified as both the physical growth of algae on infrastructure (pen netting) and the resulting shading effects on the underlying substrates; and algal growth being promoted by dissolved nitrogen and phosphorous released into the receiving environment from salmonid farming operations, causing degradation of existing macroalgal communities (e.g. through reduced light penetration).

The applicant's EIS describes the substrates as fine to medium sands and silt with no significant evidence for the presence of marine vegetation in any part of the survey area. The only macroalgae detected in the survey area were green and red drift. The applicant's EIS states that any occurrence of intertidal and sub tidal rocky reefs is at least 1 km from the SB 1-4 zones and 1.5 km from the proposed East of Yellow Bluff Zone.

Anthropogenic eutrophication has been shown to change the structure and diversity of marine benthic communities (Pearson & Rosenberg 1978⁹, Lotze & Schramm 2000¹⁰, Kraufvelin et al. 2010¹¹) with opportunistic fast-growing macroalgal species frequently occurring in eutrophic coastal waters (Cederwall & Elmgren 1990¹²). Such macroalgal blooms are generally explained by increased nutrient loads which selectively favour filamentous and foliose macroalgae.

In a study of the macroalgal composition in the Huon River and D'Entrecasteaux Channel, Oh (2009)¹³, showed that macroalgal composition at sites located 100m from farms were different from reference sites 5000m away in both exposed and sheltered areas. Sites situated 400m away from fish farms were, however, not significantly different from sites 5000m away (Oh 2009). Analogous to the results of other studies on macroalgal composition and nutrient enrichment from other anthropogenic sources, Oh (2009) found the effect of fish farms was characterised by increases in the cover of epiphytes and total opportunistic algae (which included opportunistic green algae, filamentous algae and algal turf). In particular, opportunistic green algae of the genera *Chaetomorpha*, *Ulva* and *Cladophora* (the main constituent of filamentous green algae in this region) were collectively responsive to the proximity of fish farms.

Oh (2009) also found that there was no apparent decline of canopy algae close to fish farms, as has been reported for other cases of eutrophication. The study suggested that while variations in the detectable effects of fish farms could be anticipated at scales of hundreds of metres, they rarely reached distances of several kilometres away from farming areas. Similarly, Crawford et al. (2006)¹⁴ undertook an analysis of a 10 year dataset from two small marine protected areas (Ninepin Point at the mouth of the Huon estuary and Tinderbox near North West Bay) for changes in abundance of the seven most abundant macroalgal species. This study was aimed at assessing whether broadscale impacts of effluent from marine farming activities could be detected at rocky reef communities and found no apparent patterns of change in macroalgal community composition over the 10 year time period.

More recently, Valentine et al. (2016)¹⁵ characterised reef community health at sites spanning the southeastern coast of Tasmania. This included analysis of patterns of change in macroalgal communities in southeastern Tasmania between 1992 and 2015, including sites at Tinderbox, Ninepin Point and Maria Island. The study found no consistent patterns of broad-scale change in macroalgal community structure over time. The Panel formed the view that while nutrient impacts have been detected some distance from salmon farms in Tasmania, nutrient loads have not been shown to cause significant changes to macroalgal communities on adjacent rocky reef habitats. In the relatively high energy environment in Storm Bay, nutrient dilution and dispersion was expected to be greater, and consequently the risk of eutrophication was likely to be low.

⁹ Pearson, TH. & Rosenberg, R. (1978) Macrobenthic succession in relation to organic enrichment and pollution of the marine environment. *Oceanogr. Mar. Biol. Ann. Rev.* 16:229-311.

¹⁰ Lotze, H.K. & Schramm, W. (2000) Ecophysiological traits explain species dominance patterns in macroalgal blooms. *Journal of Phycology* 36: 287-295.

¹¹ Kraufvelin, P. et al. (2010). Biomass, diversity and production of rocky shore macroalgae at two nutrient enrichment and wave action levels. *Marine Biology* 157: 29-47.

¹² Cederwall, H. et al. (1990). Biological effects of eutrophication in the Baltic Sea, particularly the coastal zone. *Ambio* 19(3): 109-111.

¹³ Oh, E. (2009). Macroalgal assemblages as indicators of the broad-scale impacts of fish farms on temperate reef habitats. Honours thesis, School of Geography and Environmental Studies, University of Tasmania. 91pp.

¹⁴ Crawford, C. et al. (2006). Development of broad scale environmental monitoring and baseline surveys in relation to sustainable salmon aquaculture in the D'Entrecasteaux Channel region. Final Report to Aquafin CRC Project 4.41, Published by Tasmanian Aquaculture and Fisheries Institute, University of Tasmania. 115pp.

¹⁵ Valentine, J.P. et al. (2016) Understanding broad scale impacts of salmonid farming on rocky reef communities, FRDC Project No 2014/024.

The draft amendment sets out management controls to manage and mitigate the potential impacts of marine farming on marine plants. These include 3.1.1, 3.1.2, 3.2.1, 3.4.1, 3.4.5, 3.4.6, 3.4.9, 3.12.1, 3.12.4 and 3.12.8. These management controls enable management of physio-chemical and biological impacts, recording and monitoring of any impacts and controls on waste (including fouling organisms) in relation to marine plants.

3.2.3.3 Conclusion

Based on the information available, the Panel is satisfied that there are unlikely to be near-scale effects on marine vegetation as a result of the draft amendment.

With regard to potential broadscale effects, the Panel was not convinced that the evidence presented in the EIS is sufficient to demonstrate the extent of likely nutrient enhancement in Storm Bay from farming operations, or the nature and extent of the effects of such enhancement. Without this information, it is not possible for the Panel to form a view on the likely effects on marine vegetation, however, the Panel is satisfied that the uncertainties can be dealt with through the adaptive management approach as discussed in section 3.2.1 Water quality of this report. The Panel noted that current and proposed research is specifically targeting uncertainty in this area.

3.2.4 Birds

3.2.4.1 Background

Representors raised concerns about potential impacts to bird life, including migratory birds, caused by entanglement, marine debris and disorientation from lighting.

3.2.4.2 Discussion

Potential impacts to birds could result from disorientation caused by night-time lighting, entanglement in marine debris or marine farming infrastructure, or physical disturbance of roosting and nesting sites.

The Panel has had regard to the information provided by the applicant in its EIS. The EIS (section 6.1.4) included information about bird life roosting, nesting and feeding sites as well as information on bird entanglement risk, including measures to avoid and mitigate risks of bird entanglement in marine debris and marine farming infrastructure.

The plan contains existing management controls that manage and mitigate the potential impacts of marine farming on birds. These include: 3.1.1, 3.1.2, 3.2.1, 3.4.1, 3.4.5, 3.4.9, 3.6, 3.8.1.4, 3.12.1, 3.12.2, 3.12.5, 3.12.8, 3.12.10, 3.12.11, 3.12.15. These management controls provide for regulatory controls to enable management of physico-chemical and biological impacts, recording and monitoring of any impacts, controls on waste and controls on minimising physical impacts on birds.

In its section 40 report, the PA recommended changes to management controls relating to wildlife interactions reflecting the PA's observation that the relevant existing management controls were no longer up to date with DPIPWE wildlife management protocols and procedures. This is discussed in section 3.4.8 of this report. The PA recommended replacing existing controls 3.12.9 through 3.12.15 with two controls; one prohibiting deliberate interactions with wildlife; and the second requiring compliance with operational requirements issued by the Secretary.

Management control 3.8.1.4, whilst designed to mitigate light pollution on the human environment, would also be appropriate in reducing impact on migratory birds. Further, lighting, to the extent that it constitutes a pollutant under EMPCA, may be managed through conditions on an environmental licence. Lighting on navigational aids are required to conform to certain legislative standards and are further discussed in 3.3.2 Navigation. Note that management control 3.8.1.4 has been renumbered to 3.8.1.3 due to other modifications made to the draft amendment.

3.2.4.3 Conclusion

The Panel, noting the recommendations of the PA in relation to marine debris, has modified the draft amendment to improve environmental performance with regard to marine debris. The Panel considers that these changes reduce the potential impacts to bird life resulting from marine debris originating from marine farming activities. As detailed in section 3.1.1 of this report, the Panel has modified the management controls by including additional management controls 3.12.11, 3.12.12, 3.12.13; editing existing management control 3.12.5; and deleting management control 3.8.1.3, and replacing it with management control 3.12.14, 3.12.16, 3.12.17, 3.12.18 and 3.12.19 (see Attachment A of Appendix A). These modifications relate to the marking and monitoring of marine farming equipment, and engineering and infrastructure management systems, capabilities and equipment.

As detailed in section 3.4.8 of this report, the Panel also modified the draft amendment by editing management controls 3.12.9 and 3.12.10, and deleting management controls 3.12.11, 3.12.12, 3.12.13, 3.12.14 and 3.12.15, relating to interactions with wildlife.

With regard to section 37(3) of the Act, the Panel does not consider these modifications to be of a substantial nature.

The Panel is satisfied that the management framework provides adequate protections for bird life.

3.2.5 Marine mammals

3.2.5.1 Background

Representors raised concerns that the proposed location of marine farming operations may result in more interactions with marine mammals with increased potential for entanglements in marine farming equipment or marine debris; or through the concentration of seal populations in the area of the proposed farming zone. Concern about the potential impacts to whales was raised with reference to a perceived potential increase in risk of entanglement as well as perceived potential for industrial marine noise to impact on the migration of threatened whales.

3.2.5.2 Discussion

There is sufficient anecdotal evidence to indicate that the existence of fish farms does lead to a concentration of seals and consequent interactions. It is possible that increased marine farming activity could result in local seal aggregations into the future. Section 6.1.5 (marine mammals) of the applicant's EIS addresses potential impacts and mitigation measures related to seals. Sub-section 6.1.5.2 of the applicant's EIS references the DPIPWE Seal Management Framework which the PA has advised is currently under review. The Panel noted that relocation of seals as a tool for managing interactions with marine finfish farms was ended in December 2017.

Southern Right Whales and Humpback Whales periodically enter Storm Bay as part of traditional migratory routes and for shelter. Potential impacts to whales may arise from entanglement, vessel and/or infrastructure strike or noise. Section 6.1.5.2 of the applicant's EIS describes measures to avoid interactions with whales.

The existing plan includes management controls that prescribe operational requirements relating to a range of wildlife, including marine mammals. These are intended to implement measures to avoid, manage and mitigate interactions with wildlife, pursuant to relevant legislation such as the *Threatened Species Protection Act 1995* and *Nature Conservation Act 2002*.

In its Section 40 report, the PA recommended changes to management controls relating to wildlife interactions reflecting the PA's observation that the relevant existing management controls were no longer up to date with DPIPWE wildlife management protocols and procedures. The PA's recommendation, along with the Panel's modification to the draft amendment is discussed in section 3.4.8 of this report.

3.2.5.3 Conclusion

The Panel, noting the recommendations of the PA in relation to marine debris, has modified the draft amendment to improve environmental performance with regard to marine debris. The Panel considers that these changes reduce the potential impacts to bird life resulting from marine debris originating from marine farming activities. As detailed in section 3.1.1 of this report, the Panel has modified the management controls by including additional management controls 3.12.11, 3.12.12, 3.12.13; editing existing management control 3.12.5; and deleting management control 3.8.1.3, and replacing it with management control 3.12.14, 3.12.16, 3.12.17, 3.12.18 and 3.12.19 (see Attachment A of Appendix A). These modifications relate to the marking and monitoring of marine farming equipment, and engineering and infrastructure management systems, capabilities and equipment.

As detailed in section 3.4.8 of this report, the Panel also modified the draft amendment by editing management controls 3.12.9 and 3.12.10, and deleting management controls 3.12.11, 3.12.12, 3.12.13, 3.12.14 and 3.12.15, relating to interactions with wildlife.

With regard to section 37(3) of the Act, the Panel does not consider these modifications to be of a substantial nature. The Panel is satisfied that the management framework provides adequate protections for marine mammals.

3.2.6 Threatened species

3.2.6.1 Background

Representors were concerned that increased nutrient loads may lead to impacts on spotted and red handfish or on threatened marine vegetation such as giant kelp; threatened whales (humpback whale and southern right whale) may be impacted by industrial marine noise, marine debris or marine farming infrastructure.

The Panel noted that the draft amendment has been referred for assessment under the *Environmental Protection and Biodiversity Conservation Act, 1999*.

3.2.6.2 Discussion

The applicant has provided detailed information on threatened species in section 6.1.6 of its EIS. This information provides an overview of species occurrence, threats arising from the draft amendment and mitigation actions to avoid significant impacts.

Handfish

The Panel noted that Red and Spotted handfish are listed as critically endangered under the EPBC Act and currently occupy highly localised areas in the Fredrick Henry Bay and Derwent Estuary. Impacts from pollution, dredging and introduced species (North Pacific Seastar) and coastal development have been identified as being the key threats to this species. However, there are no known populations of handfish in Storm Bay and the impacts that arise from localised effects from the proposed development will not impact on the known distributions of red or spotted handfish.

Giant Kelp

Giant Kelp Marine Forests of South East Australia are listed as Endangered under the EPBC Act. This ecological community is defined as giant kelp growing typically at depths greater than eight metres below sea level and forming a closed or semi-closed surface or sub-surface canopy.

The key threats to this ecological community include threats posed by climate change such as increasing sea surface temperatures, changes in nutrient availability in warmer waters, changes in weather patterns and large scale oceanographic conditions, and associated range expansion of invasive species; and impacts on water quality from land-based activities and aquaculture.

Marine farming emissions contribute to nutrient loads that may impact upon water quality parameters. Water quality management has been discussed in section 3.2.1 of this report.

Whales

Southern Right Whales and Humpback Whales periodically enter Storm Bay as part of traditional migratory routes and for shelter.

The Southern Right Whale is listed as endangered under the EPBC Act. Southern Right Whales typically calve in sheltered coastal waters of southern Australia in the winter months, occupying nursery grounds in shallow coastal waters from May to October. The Humpback Whale is listed as vulnerable under the EPBC Act. Humpback Whales generally migrate north from feeding grounds in the Southern Ocean to calving grounds along the mid and northern parts of the east and west coasts of Australia from June to August, and south from September to November.

The Panel noted that key potential threats from activities associated with the draft amendment may include entanglement, vessel disturbance including noise pollution, and habitat modification. These threats and their mitigation have been discussed in section 3.2.5 of this report – Marine mammals.

3.2.6.3 Conclusion

The Panel, noting the recommendations of the PA in relation to marine debris, has modified the draft amendment to improve environmental performance with regard to marine debris. The Panel considers that these changes reduce the potential impacts to bird life resulting from marine debris originating from marine farming activities. As detailed in section 3.1.1 of this report, the Panel has modified the management controls by including additional management controls 3.12.11, 3.12.12, 3.12.13; editing existing management control 3.12.5; and deleting management control 3.8.1.3, and replacing it with management control 3.12.14, 3.12.16, 3.12.17, 3.12.18 and 3.12.19 (see Attachment A of Appendix A). These modifications relate to the marking and monitoring of marine farming equipment, and engineering and infrastructure management systems, capabilities and equipment.

As detailed in section 3.4.8 of this report, the Panel also modified the draft amendment by editing management controls 3.12.9 and 3.12.10, and deleting management controls 3.12.11, 3.12.12, 3.12.13, 3.12.14 and 3.12.15, relating to interactions with wildlife.

With regard to section 37(3) of the Act, the Panel does not consider these modifications to be of a substantial nature. The Panel is satisfied that the management framework provides adequate protections for threatened species.

3.2.7 Chemicals

3.2.7.1 Background

Representors raised concerns about the use of therapeutants (such as antibiotics) and a perceived potential link to 'superbugs'. Representors also raised concerns about the use of the pigment astaxanthin in fish feed.

3.2.7.2 Discussion

The Panel noted that the plan contains existing management controls relating to the use of antibiotics and other chemicals. Specifically, management control 3.4.2.3 requires operators of a marine farming licence to maintain records of all chemicals used (including but not limited to antibiotics) for a period of 5 years. Furthermore, management control 3.4.3 provides for the Secretary to request that the lease holder provide this information. Management controls under 3.4.4 provide for reporting the details of any antibiotics used to the Manager, Marine Farming Branch within 48 hours. The use of chemicals is further regulated by management control 3.5 which requires the use of all chemicals to comply with the requirements of the *Agriculture and Veterinary Chemicals (Control of Use) Act 1995*. Disease controls are also provided in section 3.7 of the management controls.

Reported antibiotic use in salmon farming in Tasmania has decreased substantially over the past decade. No antibiotics use was reported marine farming operations in 2017.

Fish feed components and potential impacts to consumers are outside the scope of the Marine Farming Planning process.

3.2.7.3 Conclusion

The Panel concludes that there is adequate regulatory control of chemicals used in the production of salmon.

3.2.8 Disease and Biosecurity

3.2.8.1 Background

Representors raised the following concerns:

- *In situ* waste accumulation could contribute to disease proliferation;
- The biosecurity regulatory framework for the Tasmanian salmonid industry does not provide assurance that biosecurity risks are adequately managed;
- Concern about potential fish health, disease management and biosecurity issues in combination with other existing and proposed marine farms in the region.
- Availability and impacts of freshwater used for Amoebic Gill Disease (AGD) management.

3.2.8.2 Discussion

The Panel noted that the proposed amendment seeks to provide for expansion of production at the existing SB 1-4 zones whilst minimising biosecurity risk. The amendment seeks to establish the East of Yellow Bluff zone with the intention to stock this zone with smolts such that they can be grown-out with a minimum separation between fish year classes of 4.3 km. The Panel was encouraged that the applicant had specifically considered optimising its marine farming operations to take account of biosecurity risk.

The Panel noted that the plan contains existing management controls to manage and mitigate the potential introduction and impacts of disease. Relevant management controls include 3.01, 3.6.1-3.6.5 and 3.7.1-3.7.3. These management controls provide for regulatory controls to notify relevant authorities of disease and minimise the spread of disease in accordance with the *Animal Health Act 1995* and to limit production waste entering the marine environment which may harbor pathogens. Further, management control 3.3 ensures that minimum benthic standards are maintained, helping to ensure healthy ecosystem function and limit disease proliferation.

The controls are part of a much broader framework for the management of fish health and biosecurity matters. Powers relating to biosecurity and fish health also exist under several other statutes, including the *Living Marine Resources Management Act 1995*, which provides for the Minister to make orders to deal with marine pests and diseases, including disease control areas.

However, while the existing management controls provide a level of protection, the Panel agreed that management of biosecurity risk within Storm Bay should be strengthened by the modifying the management controls relating to disease control.

The Panel noted the relative disease free status of the Tasmanian industry, but recognised the increasing impact of Pilchard Orthomyxovirus (POMV) in the sector and the devastating impact that major disease outbreaks have had elsewhere (eg Infections Salmon Anaemia (ISA) in Faroe Islands and Chile). The Panel noted that while there is no occurrence of ISAV in Tasmania, the virus is the closest relative of POMV (Morrison et al. 2013¹⁶; Godwin et al. 2016¹⁷), and lessons learned in relation to ISA internationally are generally applicable to disease management in Tasmania.

The Panel noted the importance of a biosecurity management plan that considers world best practice in terms of off-farm and on-farm management of disease. With respect to the latter the Panel noted that physical separation of companies; single year class stocking into specified sites; adequate fallowing regimes; closed transport; and on-farm hygiene have proven to be effective measures for mitigating disease outbreaks.

For biosecurity purposes ‘year class’ means those fish first placed into State waters within a calendar year. However, within a year class there may be two or more cohorts of fish that go to sea.

The crucial consideration for biosecurity purposes is physical separation between groups of fish put to sea at significantly different times so as to reduce risk of exposure of naive fish to fish that may have been previously exposed to pathogens (eg POMV) and which have developed carrier status (Mardones et al. 2014¹⁸, Aldrin et al. 2011¹⁹, Murray et al. 2010²⁰).

Hence it is important to introduce smolt to a site over a limited “window period” to avoid disease transfer from the first smolt introduced to the site to those transferred last to the site.

Therefore the Panel has modified the draft amendment to include an additional management control to be applied to stocking of Atlantic salmon under the draft amendment (management control 3.7.6).

¹⁶ Morrison, R.N. et al. (2013). Assessment of orthomyxo-like virus pathogenicity in Atlantic salmon, FRDC Project No. 2012/053.

¹⁷ Godwin, S. et al. (2016). Establishing viral diagnostics for salmonid aquaculture in Tasmania, FRDC Project No. 2013/033.

¹⁸ Mardones, F.O. et al. (2014). The role of fish movements and the spread of infectious salmon anemia virus (ISAV) in Chile, 2007-2009, *Preventative Veterinary Medicine*, 114: 37-46.

¹⁹ Aldrin, M. et al. (2011). Modelling the spread of infectious salmon anaemia among salmon farms based on seaway distances between farms and genetic relationships between infectious salmon anaemia virus isolates, the *Journal of the Royal Society Interface*, 8(62): 1346-56

²⁰ Murray, A.G. et al. (2010). Epidemiological investigation into the re-emergence and control of an outbreak of infectious salmon anaemia in the Shetland Islands, Scotland, *Diseases of Aquatic Organisms*, 91: 189-200.

Modelling of water movement in Storm Bay has illustrated the connectivity of the proposed farming Zones and for this reason the CVO has flagged that Storm Bay will be considered a single region in terms of disease management.

The Panel noted that biosecurity risks will be difficult to manage because of the highly dispersive environment of Storm Bay, its physical connection to other farming regions such as D'Entrecasteaux Channel and the fact that, as is the case with POMV, wild fish can be a cause of pathogen transfer. The Panel noted the importance of maximising the distance between farm operations and between companies as an important component of good biosecurity management. The Panel considers that two tidal cycles in Storm Bay, a distance of 5-10km for year class separation, would reduce the risk of pathogen transfer and disease outbreak. However, the Panel formed the view that due to the spatial constraints particular to Storm Bay, a 4km separation between year classes under the draft amendment was a pragmatic compromise which reduces risk while allowing operation within marine farming zones of the Plan area.

The Panel formed the view that due to the spatial constraints particular to Storm Bay, a 4km separation between year classes under the draft amendment was a pragmatic compromise.

The Panel noted the recommendation of the PA that in light of international practices and the proposed expansions into a relatively new farming area, and following consultation with the Chief Veterinary Officer and EPA, that it would be appropriate to more explicitly state how the Secretary may exercise powers to require stocking management of an area for biosecurity purposes by modifying the draft amendment management controls relating to disease.

The Panel noted that there has been a renewed commitment from industry and government towards better management of biosecurity risks, as articulated in the *Sustainable industry growth plan for the salmon industry*. The Panel considers that biosecurity risk poses the greatest single threat to marine farming operations in Tasmania and emphasises that an update of the *Biosecurity Program* is critically important and needs to be completed prior to commencement of activities under the draft amendment.

Species of salmonid to be farmed in Storm Bay

The Panel recommends that of the salmonids, only Atlantic salmon should be allowed to be farmed in Storm Bay.

Between 2006 and 2015 there were 14 cases of POMV infection in farmed Atlantic salmon in Tasmania, however the disease has never been reported in rainbow trout (Godwin et al 2016). In Atlantic salmon the disease causes mortalities of 300 fish/cage/day, sometimes up to 5000 fish/cage/day (Godwin et al 2016). As there have been no clinical outbreaks in trout it is possible that this species can become an asymptomatic carrier and a reservoir of POMV. Similarly, ISA does not cause mortalities in trout which are carriers of ISAV (Nylund et al. 1997²¹; Devold et al. 2000²²; Plarre et al. 2005²³). The Panel noted that the current diagnostic test for POMV does not detect carriers.

²¹ Nylund, A. et al. (1997). Replication of the infectious salmon anaemia virus (ISAV) in rainbow trout, *Oncorhynchus mykiss* (Walbaum), *Journal of Fish Diseases*, 20:275-279.

²² Devold, M. et al. (2000). Use of RT-PCR for diagnosis of infectious salmon anaemia virus (ISAV) in carrier sea trout *Salmo trutta* after experimental infection, *Diseases of Aquatic Organisms*, 40:9-18.

²³ Plarre, H. et al. (2005). Prevalence of infectious salmon anaemia virus (ISAV) in wild salmonids in western Norway, *Diseases of Aquatic Organisms*, 66:71-79.

Amoebic Gill Disease

The Panel considers that the frequency of freshwater bathing and requirements to support an appropriate bathing regime at the proposed site is primarily an operational matter for a lessee to consider. Freshwater Resources are discussed in section 3.3.9 – Land use and development.

Planning for mass-mortality events

While the management of single or minor multiple mortalities is well embedded, there is a need to plan for waste management in the event of mass mortalities, which could occur due to a disease outbreak. There are adequate requirements under Environmental Licence conditions and general provisions of EMPCA to deal with mass mortality events however the Panel recommends that the Biosecurity Plan should explicitly address how operators will deal with disposal of mortalities following a mass mortality event. This should include *inter alia* the method of containment, extraction, transport, waste treatment, waste disposal, and biosecurity measures that would be applied throughout these steps. While it is accepted that the circumstances for an actual mass mortality may alter this plan it is reasonable to expect due consideration of the basic process for waste management and the options for final entombment.

3.2.8.3 Conclusion

The Panel has modified the draft amendment to strengthen biosecurity management arrangements to reduce biosecurity risks, including:

- mandating separation distances between fish of a different year class and fallowing periods;
- specifying how the Secretary may declare an area to be a single year class area and the consequent obligations of lease-holders; and
- strengthening planning arrangements through a requirement for licence applicants to provide evidence of a biosecurity and fish health plan and once granted, licence holders to operate in accordance with that Plan.

The Panel has added management controls 3.7.4, 3.7.5, 3.7.6, 3.7.7, 3.7.9, 3.7.10, 3.7.11, 3.7.12 and 3.7.13 (see Attachment A of Appendix A). With regard to section 37(3) of the Act, the Panel does not consider these modifications to be of a substantial nature because in the Panel's view, the modifications align with existing powers the Secretary has under management control 3.01 and the Secretary may take action consistent with the modifications regardless of their explicit existence in the management controls.

3.2.9 Introduced marine pests

3.2.9.1 Background

Representors raised concerns about the potential for the introduction or spread of marine pests through proposed marine farming operations.

3.2.9.2 Discussion

Risks of transmission of marine pests through marine farming activities generally relate to biofouling and translocation of equipment. The panel noted that the plan contains existing management controls to manage and mitigate the potential introduction of marine pests. Management control 3.12.4 provides for the removal of fouling organisms from marine farming equipment. These controls operate to ensure that marine farming equipment is appropriately maintained, reducing the risks associated with excessive biofouling and dilapidated equipment.

The EIS refers to the applicant's biosecurity protocols as mitigating the potential for the introduction and spread of introduced marine pests.

In addition to the regulatory controls provided through the Plan and marine farming licences issued under the *Living Marine Resources Management Act 1995* include conditions relating to management of introduced marine pests.

3.2.9.3 Conclusion

The Panel is satisfied that there are existing measures to limit the introduction and spread of introduced marine pests from marine farming operations relevant to the draft amendment.

3.2.10 Climate change

3.2.10.1 Background

Representors raised concerns that there has not been adequate consideration of climate change effects on the area's suitability for salmon farming. Specific concerns related to the potential for rising sea temperatures to cause greater fish stress and impacts on fish welfare and that the effects of climate change may make farming operations in the proposed area increasingly challenging, leading to decline in production and / or failure to achieve sustained production increases or environmental harm (e.g. during storm events).

3.2.10.2 Discussion

The effects of climate change may impact on environmental responses to farming activity. Specific measures to monitor, mitigate and manage environmental effects (whether or not more pronounced as a result of climate change) are described in 3.2.1 Water quality, 3.2.2 Substrates and fauna and 3.2.3 Marine vegetation.

In relation to engineering challenges arising from climate change, such as potential increased frequency or severity of storm events, see section 3.1.1 of this report for discussion and recommendations in relation to infrastructure and servicing.

In relation to climate change impacts on the viability of marine farming in the proposed zone, the plan includes a declaration that the Crown in right of the State of Tasmania gives no warranty, either express or implied, that marine farming zones identified are suitable for marine farming activities. Investment in marine farming activities by a lease holder is subject to risk borne by the lease holder. The panel noted that the waters of Storm Bay are currently suitable for the farming of salmonid.

3.2.10.3 Conclusion

The Panel acknowledges that the effects of climate change may exacerbate the risks associated with marine farming but considers that the hazards can be managed under the existing and modified management controls and therefore does not consider that any further modifications are required at this time.

3.2.11 Environmental management

3.2.11.1 Background

Representors raised the following issues in relation to environmental management:

- Concern about the transparency of environmental performance standards;
- Concern about the enforceability of regulatory controls, namely nitrogen limits;

- Request for information to be provided about the process that will be applied by the EPA to determine whether permissible nitrogen inputs will be increased;
- Concern about the adequacy of baseline information, particularly with regard to rocky reefs;
- Concern about the ability of the environmental monitoring program to detect early stage ecosystem changes;
- Publication of environmental monitoring and production information.

3.2.11.2 Discussion

The plan contains existing controls to monitor and manage the environmental effects of proposed salmon farming including regulatory controls to:

- require lessees to provide a baseline environmental survey to the satisfaction of the Director EPA prior to the commencement of marine farming operations;
- fallow or comply with limits on the use of a lease area if unacceptable benthic impacts are identified through routine monitoring;
- require an independent auditor to examine record keeping; and
- require lessees to comply with any environmental monitoring requirement.

Environmental compliance standards have historically been set through conditions on a marine farming licence. As a consequence of the recent regulatory changes, in future, compliance standards will be set through environmental licences issued by the EPA under EMPCA. Licence conditions are used to describe the impacts that may be considered significant for the purposes of the relevant management controls.

The Panel noted that the monitoring programs proposed for Storm Bay provided an ability to actively gather data relevant to the operational phase and respond to identified issues prior to these presenting off lease or broader impacts on the marine environment. Most notably this included: pre-stocking benthic surveys to ensure characterisation of the specific site prior to the introduction of fish; monthly water sampling during the peak biomass use period to ensure close monitoring during the highest impact time in the growth cycle; and post-lease stocking to ensure return to a reasonable state prior to re-stocking. This constitutes a significant intensification of monitoring effort.

Concerns that a 35m lease boundary compliance distance may not be fit for purpose in the more exposed Storm Bay environment were acknowledged by the Panel. This has been the standard distance used for finfish farming environmental management across Tasmania. For Storm Bay it represents a starting point for new sites and provides a consistent means of managing existing sites. The EPA, through environmental licences issued under EMPCA, has the ability to amend this distance if it was found not to suit farming conditions in Storm Bay. The Panel understands that Government is developing an environmental standard for environmental management of finfish farming in Tasmania, for implementation in 2019. The Panel formed the view that while this standard is being developed, close scrutiny of intensive lease specific data is an appropriate mitigation.

Management controls relating to nitrogen outputs from finfish farming are provided by management controls 3.2.1-3.2.8. These controls and the planned development of a biogeochemical model and the BEMP are discussed in sections 3.2.1 Water quality; 3.2.3 Marine vegetation and 3.4.2 Holistic impact assessment. Section 91 of the Act creates offences for obstruction of execution of plans, and these provisions would apply to a failure to comply with a TPDNO determination made under the plan. Section 91 includes special penalty provisions that apply to exceeding a TPDNO determination, as prescribed by the *Marine Farming Planning Regulations 2016*.

The process for an operator to pursue an increase in nitrogen input limits beyond those modelled for this proposal may take one of two paths:

- a process under the Act, seeking an amendment to the plan to enable their operations to expand – the potential effects of such expansion, including any additional nitrogen inputs, would be duly considered through this process; or
- if no change to the plan was required, a process under EMPCA, seeking a variation to the relevant environmental licence under Part 3 of EMPCA.

Discussion of environmental management issues relating to rocky reefs is presented in section 3.2.2 Substrates and fauna and section 3.2.3 Marine vegetation. The Panel recommended that adequate baseline information on sensitive habitat such as rocky reefs be collected prior to the commencement of farming.

In relation to decommissioning and rehabilitation, the plan contains existing management controls (3.12.1 and 3.12.5) that require lessees or sub-lessees to comply with the *Marine Farming Planning Act 1995* and remove redundant, dilapidated or loose marine farming structures and equipment from the lease area as directed by the Secretary. The Act contains provisions relating to removal of equipment and fish by a lessee and for recovery of costs by the Crown if the lessee does not remove equipment and fish as required. Further, EMPCA provides that an environmental licence may include conditions requiring a site to be decommissioned or rehabilitated as required.

In relation to comments about the public availability of relevant environmental data, the Panel noted that improving the transparency of information on the industry's environmental performance through the establishment of an independent web portal hosted by IMAS is identified as a priority action within the *Sustainable industry growth plan for the salmon industry*.

In addition to the powers under EMPCA relating to environmental licences, the provisions of EMPCA apply generally in relation to avoiding environmental harm. It is an offence under EMPCA to cause environmental harm, for example, through noise, water quality, odour or light pollution.

3.2.11.3 Conclusion

The Panel considers that there are adequate environmental management systems in place to avoid serious environmental harm and that lease holders are required to provide a range of environmental management and performance information to the Regulator on an ongoing basis. Further, the Panel noted the increased resourcing of the EPA Division to ensure capacity to regulate and work collaboratively with lease holders.

3.3 Impacts on the Human Environment

3.3.1 Visual

3.3.1.1 Background

Representors raised concerns about the potential visual impacts of farm infrastructure and lighting to residential amenity and the visitor experience in Storm Bay and on Bruny Island which could impact on tourism values. Representors were also concerned about the visual impacts on residential and tourism amenity of marine debris originating from marine farms and support vessels.

3.3.1.2 Discussion

Marine debris is discussed in section 3.1.1 of this report, including a description of modifications made to the draft amendment to strengthen management controls relating to marine debris. Issues relating to tourism and socio-economic related impacts are discussed in sections 3.3.8 Tourism and 3.3.10 Socio-economic aspects of this report.

The Panel noted that the plan includes the following visual controls relating to infrastructure and operations: 3.8.1.1-3.8.1.3. These controls provide for the Secretary to:

- direct the colour, profile, size and shape of marine farming equipment;
- regulate the equipment that may be located within the lease area; and
- require that light generated from marine farming operations does not create a nuisance.

3.3.1.3 Conclusion

The Panel considers that the Plan contains management controls that mitigate visual impacts to reasonable levels. Whilst the Plan contains management controls for limiting visual impacts, the Panel acknowledges that the proposed development may have a residual visual impact for some individuals.

3.3.2 Navigation

3.3.2.1 Background

Representors raised concerns about potential impacts to navigation enjoyment and safety resulting from the draft amendment as well as the potential effects of the draft amendment in combination with other marine farming proposals in Storm Bay:

- Concern that marine debris originating from marine farms and vessels poses safety hazards to vessels.
- Concern that navigation safety may be reduced due to farms being located such that access to safer waters (e.g. a lee shore) is reduced.
- Concern that navigation safety may be reduced because of poor visibility of farms (considering day and night conditions as well as in large swells) leading to increased risk of collisions.
- Concern that navigation safety may be reduced if lease boundary beacon's become inoperable or are off-station.
- Concern that navigation enjoyment may be reduced because farms limit the waters that may be freely sailed in.
- Concern that the proposed location will cause navigation difficulties for Tasmanian yacht races and potentially impact on Storm Bay as a 'last hurdle' in the Sydney to Hobart.

Some representors also made recommendations to mitigate perceived risks.

At the hearing conducted on 10 May 2018, the Panel heard from the Cruising Yacht Club of Tasmania Inc (the Club). The Club made the following key recommendations in regard to navigation safety and marine farming in Storm Bay:

- Official nautical charts should be updated more regularly and with more accuracy and consistency;
- The Club's preference is that leases are shown on nautical charts (not just zones);
- Nautical charts should show the different types of marks being used;

- Remote telemetry of equipment should be required and reporting of off-station, lost or malfunctioning equipment should be mandatory;
- Notices should be issued both when there is a hazard, as well as when the hazard has been removed.

In the Club's written representation, the Club also preferred that lights around an individual lease should be synchronised, and lights on adjacent leases should use unique sequences or timeslots. The Club also supported the use of virtual AIS marks in addition to physical marks.

3.3.2.2 Discussion

The Panel noted that the applicant has consulted with Tasports, MAST and provided information to boating clubs, as outlined in Section 4.1 and 6.2.2 of the applicant's EIS. Consultation resulted in the applicant locating the East of Yellow Bluff Zone outside recommended navigation and commercial shipping channels. The Panel noted that the applicant's consultation with yachting and boating clubs revealed similar concerns to those raised in representations and at the hearing.

The Panel noted that the PA consulted with MAST in preparing its Section 40 report.

Marine Farming Infrastructure

The physical presence of marine farming infrastructure necessitates the exclusion of other activities from marine farming areas. As such, the proposed development would impact on navigation in Storm Bay.

The plan contains the following existing management controls relating to navigation, 3.9.1-3.9.3, 3.12.3, 3.12.6 and 3.13.1-3.13.4. These management controls:

- require that lessees must mark the external boundary of the lease area in whatever manner is required by the Secretary and MAST;
- require anchors and mooring lines that extend outside the lease area to be at least 5m below the surface at the boundary of the lease area and not extend outside a marine farming zone;
- require lessees to maintain marine farming structures and equipment in a serviceable condition;
- empower the Secretary to require redundant, dilapidated or loose marine farming structures and equipment must be removed from the lease area; and
- require a lessee to take action to recover any part of marine farming structures or equipment that break away from the lease area, and dispose of them in an appropriate manner.

The draft amendment includes special condition 3.13, which imposes powers and obligations relating to marking of the farmed area, requiring equipment to be contained and marked in similar terms to the lease area. This provides for the minimum area considered necessary for safe navigation to be marked.

Marine Debris

In its Section 40 report, the PA advised that as a matter of common practice, marine farm operators notify MAST of navigational hazards (such as lost or off-station equipment), such that a notice to mariners may be issued. However, there may not be any direct regulation requiring marine farm operators to take this action and it is not presently required within the plan, lease or licence conditions. In light of this, the PA recommended the addition of a management control to require lessees who become aware of a potential navigation hazard, to notify MAST of the hazard and take any other action directed by MAST, or considered necessary by the lessee. The Panel considers that the additional management control is required.

Discussion in section 3.1.1 Infrastructure and servicing of this report includes a description of modifications made to the draft amendment to strengthen management controls to reduce marine debris hazards.

Navigation markers and charts

In its section 40 report, the PA advised that it understands that Australian Hydrological Survey charts commonly show zone boundaries. The PA and MAST consider that marking the zone boundaries is the most appropriate means of marking charts. Use of technology (such as lighting and AIS) to assist skippers in keeping a fit and proper lookout will provide a practical solution to on-water navigational safety. This may be particularly important in the deeper and more exposed Storm Bay environment, as lease corner marks may move substantially within their moored radius. The Panel noted that the PA takes advice from MAST in relation to navigational marks and lighting requirements.

Marine Farming Lights

Management control 3.8.1.4 requires that lessees are to ensure that light generated from marine farming operations does not create a nuisance. Note that management control 3.8.1.4 has been renumbered to 3.8.1.3 due to other modifications made to the draft amendment.

3.3.2.3 Conclusion

The Panel, noting the recommendations of the PA in relation to marine debris and as discussed in section 3.1.1 of this report, has modified the draft amendment to improve environmental performance with regard to marine debris.

The Panel has modified the draft amendment by adding management control 3.12.15 (See Attachment A of Appendix A) in order to strengthen reporting requirements. With regard to section 37(3) of the Act, the Panel does not consider these modifications to be of a substantial nature.

3.3.3 Reservations

3.3.3.1 Background

One representor submitted that any expansion of marine farming to oceanic areas should be balanced by the appropriate protection of important marine areas. The representor referred to the Resource Planning and Development Commission (2008) Inquiry into the establishment of marine protected areas within the Bruny Bioregion which the representor states undertook a comprehensive review of the proposed Bruny Bioregion and made a series of recommendations about marine protected areas (MPA)²⁴. The representor also stated that the Government is yet to implement all of the Commission's MPA recommendations and urged the Panel to consider these outstanding recommendations in relation to the proposed Storm Bay expansion.

²⁴ Resource Planning and Development Commission (2008) *Inquiry into the establishment of marine protected*

3.3.3.2 Discussion

The Panel noted that no marine reserves have been identified within the proposed MFDP area or surrounding areas. In relation to the comment on marine protected areas, any future changes to marine protected areas that are not currently proposed by Government is a matter outside of the Marine Farming Development Planning process.

3.3.3.3 Conclusion

The Panel is satisfied that the draft amendment will not impact on reservations.

3.3.4 Noise

3.3.4.1 Background

Representors raised concerns about noise impacts to residential amenity resulting from increased service vessel traffic past Dennes Point and Tinderbox. Some representors were concerned that they are already experiencing noise impacts from marine farming service vessels transiting past Dennes Point and that the proposed developments could increase these impacts. Comments were concerned with the potential for cumulative noise impacts of increased traffic movements from both the Storm Bay North and the Trumpeter Bay proposals. Representors were also concerned that stationed marine farming equipment could create a noise nuisance, impacting on residential amenity.

Representors made the following recommendations:

- There should be an overall assessment of the environmental impact of vessels servicing fish farms in Storm Bay from North West Bay and further south in the Channel.
- Consideration should be given to controls on hours of operation of vessels travelling to the proposed leases and ongoing monitoring of vessel noise.
- Specific noise limits should be imposed, extending both to equipment within the farmed area and vessel traffic.

Some representors raised concerns that increased vehicle (truck) movements and land-based infrastructure requirements may increase road traffic and noise impacts in residential, tourism and holiday areas, impacting on lifestyle/ tourism and residential amenity.

3.3.4.2 Discussion

The plan includes management control 3.12.2 which requires lessees to comply with guidelines on noise emissions made pursuant to EMPCA for marine farming operations.

Management control 3.8.1.3 requires that floating storage huts and other facilities located in the lease area must be authorised in the relevant marine farming licence. As a matter of policy, the Minister requires a noise assessment for such vessels to accompany any application for such an authorisation and this forms part of the information on which a determination made. Together, these controls provide effective means to avoid marine farming operations within the plan area from having excessive noise impact.

Notwithstanding that these controls are effectively applied for existing marine farming operations, in its Section 40 report, the PA recommended that management control 3.12.2 could be improved by minor re-wording, recommending that the words 'made pursuant to the *Environmental Management and Pollution Control Act 1994*' be deleted and replaced with 'issued by the EPA'. This change would mean that guidelines issued by the EPA could be applied, regardless of their status as a statutory instrument made under EMPCA.

Additionally the PA recommended that management control 3.8.1.3 should be moved from 3.8 'Visual controls' to 3.12 'Other controls' in order to give it broader effect (see recommendation in relation to management control 3.8.1.3 in section 3.1.1 of this report - Infrastructure and servicing).

Changes were made to the regulatory framework for finfish farming in December 2017. These changes gave direct powers to the EPA to regulate the environmental management of finfish farming activities, including the issuing of environmental licences. The EMPCA defines a pollutant to include noise, and under Section 42Z of that Act, an environmental licence can include any condition or restriction requiring the holder of the environmental licence to undertake such measures as are specified in the licence to limit the environmental effects of traffic movements, or vessel movements, to and from the area of land, or area of State waters, to which the licence applies. As such, regulatory powers in relation to environmental effects of noise associated with finfish farming now sit primarily with the EPA.

Any member of the community who considers that marine farming operations may be causing a noise nuisance should report their concerns to the EPA.

3.3.4.3 Conclusion

The Panel has modified management control 3.12.2 and moved management control 3.8.1.3 from 3.8 'Visual Controls' to 3.12 'Other controls', it is numbered 3.12.14. (see Attachment A of Appendix A). With regard to section 37(3) of the Act, the Panel does not consider these modifications to be of a substantial nature.

3.3.5 Commercial fishing

3.3.5.1 Background

Representors raised concerns that fish habitat and fish stocks could be impacted such that commercial fishing is impacted. These concerns related to both local and cumulative effects. Key species listed in representations and targeted by commercial fishers were rock lobster, abalone, tiger flathead, and school whiting. Key habitat listed in representations was rocky reef.

The potential for harmful algal blooms to increase as a result of increased nutrient inputs was also raised as a concern. See section 3.2.1 Water quality of this report for discussion of harmful algal blooms.

The Tasmanian Seafood Industry Council (TSIC) made a representation in relation to the draft amendment. The Tasmanian Seafood Industry Council recommended:

- No farming activity should overlap current wild catch/ other marine farming activities in order to maintain current wild catch/ marine farm access rights.
- If a new salmon farm development impacts current wildcatch fishery catches / farming operations, compensation must be considered.
- A 1.5nM buffer between any new salmon farm development and hard reef habitat must be formalised within Government policy.

- That the Government commit to funding IMAS to conduct a side scan 'swath' mapping project to update or create habitat maps within each of the potential salmon farming 'green zones' identified in the Salmon Growth Plan.
- Establishment of a TSIC member forum to better explain salmon farm operations and future expansion plans.

The Tasmanian Seafood Industry Council also noted that consultation over Storm Bay proposals had progressed under a 1km buffer distance between marine farming zones and rocky reef, but stated that it would show considerable good will if the 1.5nM (approximately 2.8km) distance could be achieved.

3.3.5.2 Discussion

Fishery Access

The development proposed to be enabled through the draft amendment would reduce the area available for some commercial fishing activity in Storm Bay and this may have an impact on some commercial fishing operators, in particular, Danish Seine operators.

Ecosystems and wild fish stocks

Finfish farming interacts with the ecosystem through water quality, the benthos and physical presence of equipment, nets, fish and feed. The existing and draft management controls contain measures to limit the extent of each of these interactions, as well as to monitor impacts and apply management responses. Management controls 3.1, 3.2, 3.3.1-3.3.7, 3.4.1-3.4.10, 3.6.1-3.6.5 and 3.12.4 provide for regulatory controls to:

- limit significant visual, physio-chemical or biological impacts to 35m beyond the boundary of the lease area;
- monitoring of environmental parameters within the lease area, 35m outside the lease area and at control sites;
- limit nutrient inputs through a TPDNO cap;
- set a maximum permissible stocking density and the ability for the regulator to alter it at any time should he/she consider it appropriate;
- require fallowing of farmed areas;
- set a minimum distance of 1m between the finfish cage net and the seabed;
- specify baseline environmental survey requirements for lease areas prior to the commencement of marine farming operations in order to determine any licence conditions that may be required to manage environmental values;
- require the keeping of production records for each lease area, including stocking density, feed, chemical and therapeutant inputs and mandatory reporting when required by the regulator;
- require environmental monitoring, assessment, audit and review; and
- establish controls for managing waste from operations and harvesting; as well as removal of fouling organisms from marine farming infrastructure.

These issues are further discussed in section 3.2.1 Water quality and section 3.2.2 Substrates and fauna of this report.

The Tasmanian Government is working with IMAS and CSIRO to establish a program of work to develop the biogeochemical model and BEMP. This project has recently been granted FRDC approval. This work, together with results from FRDC project 2015-024 “*Managing ecosystem interactions across differing environments: building flexibility and risk assurance into environmental strategies*” and previous habitat mapping will provide a body of data relating to the Storm Bay environment that will help to inform regulatory management. The proposed broadscale environmental monitoring will help to inform regulators about ecosystem responses to increased marine farming in Storm Bay. Together with the biogeochemical model, staged development and targeted future research, adverse impacts on wild fish species may be avoided, mitigated or managed through the management controls and other elements of the regulatory framework, such as environmental licences under EMPCA. (See section 3.2.2 Substrates and fauna for further discussion of FRDC project 2015-024).

In addition, catch and effort data collected for Tasmanian commercial fish and shellfish fisheries is reported annually by IMAS, to provide information about the status of fish stocks and trends. Reporting includes scalefish (e.g. Tiger Flathead and School Whiting), rock lobster and abalone. Data for the Storm Bay region is available and should trends in commercial fisheries stocks (which is scientifically attributable to salmonid farm development) become evident, appropriate management responses would be investigated.

In relation to comments about the public availability of relevant environmental data, the Panel noted that improving the transparency of information on the industry’s environmental performance through the establishment of an independent web portal hosted by IMAS is identified as a priority action within the *Sustainable industry growth plan for the salmon industry*.

Proximity to hard reef habitat

The Panel noted that the distance between the marine farm zone and hard reef habitat was constrained by Navigational considerations. The Panel recognised the concerns of the abalone and rock lobster sectors however, draws attention to section 3.2.2 which considers the potential impact of marine farming on reef.

The Panel understands that swath mapping of the entire Storm Bay is well underway.

Recommendations that are out of scope

The panel noted the recommendations made by the Tasmanian Seafood Industry Council in relation to marine farming policy such as the question of compensation and a buffer distance formalised in Government policy. The Panel considers that these issues are outside the scope of its consideration of the draft amendment. The Panel also considers the recommendation on the establishment of a member forum to be outside the scope of its consideration of the draft amendment but would encourage the salmon industry to consider such a forum as part of its on-going community and stakeholder engagement work.

3.3.5.3 Conclusion

The Panel acknowledges that there may be some impact to commercial fishing operators in Storm Bay.

3.3.6 Recreational fishing

3.3.6.1 Background

Representors raised concerns that fish habitat and fish stocks could be impacted such that recreational fishing is impacted. These concerns related to both local and cumulative effects. Key species listed in representations and targeted by recreational fishers were rock lobster, abalone and flathead, flounder and whiting. Key habitat listed in representations was rocky reef. Some representors raised concerns that recreational fishers would lose access to fishing grounds.

The potential for harmful algal blooms to increase as a result of increased nutrient inputs was also raised as a concern. See section 3.2.1 Water quality of this report for discussion of harmful algal blooms.

3.3.6.2 Discussion

Management controls relating to water quality and substrates and fauna have been described in the relevant sections of this document and should be referred to. No other management controls are relevant to the issues raised.

In relation to comments asserting that recreationally targeted species have declined in response to increased finfish farming, the Panel noted that these assertions conflict with findings of recent research. For example, Moore et al. 2018²⁵, reported that 'a Sand Flathead fishery-independent survey commenced in 2012 to support classification of this species' and highlighted fishing pressure, population dynamics and management arrangements as influencing the availability of legal size fish in the D'Entrecasteaux Channel and Frederick Henry-Norfolk Bay. They found that standardised catch rates from the fishery-independent survey increased in 2017 at all locations relative to previous years and concluded that this finding suggests that the management measures introduced in late 2015 may be having a positive effect on the stock. In relation to flounder, they observed that the declining commercial catch rate was likely related to market demand and management changes.

Lyle and Tracey (2017)²⁶ estimated that 12% of recreational rock lobster and 38% of recreational abalone harvest came from the D'Entrecasteaux Channel. In relation to rock lobster (statewide), they found that amongst those respondents to the survey conducted for the assessment of the 2016-17 recreational fishing season who had fished for rock lobster, 'more than twice as many suggested that the quality of the fishery in 2016-17 was better (34%) rather than worse (15%) compared with the previous season' and that 'almost half of the active fishers...suggested that the overall quality was about the same as in the previous year'. Further, they found that 62% of respondents disagreed with the proposition that legal size rock lobster were less abundant or more difficult to catch in 2016-17. They concluded that (statewide) 'recreational abalone catch rates have fluctuated without obvious trend through time, reflecting the fact that many divers regularly attain the bag limit' and that the average daily harvest rate was within the range of that reported in previous years.

3.3.6.3 Conclusion

The Panel recognises that the development proposed to be enabled through the draft amendment would reduce the area available for recreational fishing activity in Storm Bay and that this may have an impact on some recreational fishers.

²⁵ Moore, B. et al. (2018). Tasmanian scalefish fishery assessment 2016/17, Institute for Marine and Antarctic Studies.

²⁶ Lyle, J.M. & Tracey, S.R. (2017). Tasmanian Recreational Rock Lobster and Abalone Fisheries: 2016-17 fishing season, Institute for Marine and Antarctic Studies.

3.3.7 Recreational activities

3.3.7.1 Background

Representors raised the following perceived visual, water quality, and safety impacts on recreational activities resulting from the draft amendment:

- Marine debris originating from marine farms and vessels wash up on beaches or pollute coastal waters leading to reduced recreational amenity (see section 3.1.1 Infrastructure and servicing of this report for discussion).
- Access to the waterway for recreation is limited, impacting on recreational enjoyment (see 3.3.2 Navigation and 3.3.6 Recreational fishing of this report for discussion).
- Visual impacts of the fish farms reduce recreational amenity (see 3.3.1 Visual of this report for discussion)

3.3.7.2 Discussion

See sections 3.1.1 Infrastructure and servicing, 3.2.1 Water quality, 3.2.2 Substrates and fauna, 3.3.2 Navigation, 3.3.6 Recreational fishing and 3.3.1 Visual for discussion of potential impacts relating to these aspects. Related issues are also considered in 3.3.8 Tourism of this report.

3.3.7.3 Conclusion

The Panel recognises that public access to the lease area would be lost, however, overall, the Panel does not consider that recreational activities will be excluded as a result of the draft amendment.

3.3.8 Tourism

3.3.8.1 Background

Representors raised concerns that the draft amendment, in isolation and in combination with other proposed marine farming developments in Storm Bay, could impact on tourism to Storm Bay and Bruny Island. Concerns about direct impacts principally related to visual impacts from marine debris and marine farming infrastructure impacting on views, vistas and amenity. Concerns were also raised that the Tasmanian Brand could be impacted which could flow on to reduced tourism interest in Bruny Island.

3.3.8.2 Discussion

Management Controls relating to visual impacts and marine debris are discussed in section 3.3.1 Visual and 3.1.1 Infrastructure and servicing of this report. The Tasmanian Brand is discussed in section 3.4.7 of this report.

The Panel noted that no representations were received from tourism operators or tourism representatives, although some representors stated that tourism operators have raised concerns about impacts to their businesses. In section 6.2.11.1 of its EIS, the applicant stated that during its stakeholder consultation, tourism operators raised specific concerns in relation to biosecurity, wildlife interactions and impact of nutrients into the waterway, marine debris and the overall perception of the industry.

3.3.8.3 Conclusion

The Panel does not consider that there is evidence that tourism to Storm Bay and Bruny Island will be significantly impacted by the draft amendment. However the Panel does acknowledge that the proposed development may have a residual visual impact for some individual businesses catering to tourism.

3.3.9 Land use and development

3.3.9.1 Background

Representors raised concerns about the potential for industry expansion to increase heavy truck movements, noise, light and visual pollution around Storm Bay, that there is not adequate freshwater available to support the draft amendment, and that the applicant had not identified the source or quantity of freshwater required for the development.

3.3.9.2 Discussion

The panel noted that the draft amendment does not seek to alter land-based planning schemes and does not propose any changes to land use or development. Any land use and development changes would be assessed under separate legislation.

Freshwater Resources

The Panel noted that the draft amendment would provide for marine farming to occur within the proposed East of Yellow Bluff Zone. The Panel considers that access to freshwater for the proposed development within the marine farming zone is a matter for the proponent to assure itself of and to take any steps to obtain the required approvals under the relevant legislation.

The Panel noted that the applicant considers that it has access to adequate fresh water resources for the proposed expansion.

The Panel also noted that if a member of the public has a concern relating to freshwater management, they can contact the Water Resources Group within the Department of Primary Industries, Parks, Water and Environment.

3.3.9.3 Conclusion

The Panel acknowledges that increased development may result in increased road traffic on around Storm Bay which may impact on some individuals.

3.3.10 Socio-economic aspects

3.3.10.1 Background

Representors raised concerns that the existence of finfish farms in Storm Bay could impact on the Tasmanian Brand which relies on a 'clean, green, natural image' for example, through visual impacts of marine farming infrastructure, or through industry reputation of poor environmental performance.

Representors were also concerned that commercial fishing, tourism and local producers may be negatively impacted by the expansion of marine farming in Storm Bay. Concerns relating to commercial fishing and tourism have been discussed in the relevant sections of this report (3.3.5 Commercial fishing and 3.3.8 Tourism).

Representors raised concerns that environmental, social and economic costs and benefits that may result from the draft amendment and the other developments proposed for Storm Bay, have not been adequately assessed. One representor recommended that a single consolidated marine farming development plan for the Bruny Island Storm Bay Bioregion should be developed to consider potential environmental, social and economic costs and benefits which might result from the proposed developments. This is discussed further in section 3.4.1 of this report – Marine farming planning process.

3.3.10.2 Discussion

The Panel noted that many of the issues raised by representors in relation to socio-economic impacts and the draft amendment pertained to perceived effects of all three current Storm Bay marine farming planning proposals. All management controls in the MFDP are relevant to the concerns raised by representors. Strong industry environmental performance and compliance is key to maintaining the Tasmanian Brand, underpinning a strong tourism economy, as well as minimising impacts to environmental and social values and existing businesses in the region.

Based on the relative economic value of commercial fisheries that may be impacted by the proposal, some individual fishers may be locally displaced from areas they have historically fished. Any effects of this are unlikely to have substantial socio-economic impact at the regional level.

3.3.10.3 Conclusion

The Panel concluded that the socio-economic benefits of marine farming expansion in Storm Bay are likely to be widespread through both the local economy and the Tasmanian economy. The Panel acknowledges that some individuals will be impacted by reduced amenity caused by visual or noise impacts from marine farming infrastructure or service vessels.

3.4 Other matters

3.4.1 Marine farming planning process

3.4.1.1 Background

Representors raised the following concerns relating to the marine farming planning process:

- Dissatisfaction with the planning framework.
- Concern that the exhibition period coincided with Christmas.
- Concern that the planning process, including EIS preparation, lacked independence, scientific rigour or appropriate oversight.
- Concern that the EIS did not address, or provide sufficient independent information on potential socioeconomic, recreational, tourism and public amenity effects.

3.4.1.2 Discussion

The Act sets out the statutory process for the preparation of marine farming development plans and for amendments to marine farming development plans. This is one component of the planning and approval framework that applies to sea-based marine farming developments. The framework is described on pp10-11 of the *Sustainable industry growth plan for the salmon industry*.

In relation to the draft amendment, the Act specifies timeframes for various steps in the planning process, including that the period of exhibition of a draft amendment is to be at least three weeks and not more than two months. The Panel noted that the PA exhibited the draft amendment for the maximum allowed period.

Comments in relation to the coincidence of Christmas and the summer holiday period with the exhibition period are noted. Given the two month exhibition period, there are several periods in any year that would likely overlap with holiday periods.

The draft amendment is accompanied by an EIS, which was substantially prepared by the applicant. The EIS is prepared in accordance with guidelines issued by the PA specific to the proposal and which have input from the Panel. The EIS contains information from a range of scientific and independent sources, as well as information from the applicant in relation to their proposal to develop and operate a marine farm in the proposed zone.

The Panel is a statutory body established by the Act with the functions described by section 9(1). It comprises nine persons who are appointed by the Governor based on their ability, expertise and experience in certain matters. Panel members have scientific and professional expertise, which they apply to these functions. As such, there is considerable independent review and consideration of matters through the planning process.

3.4.1.3 Conclusion

The Panel noted the comments that have been made on the planning process, however, they are outside the scope of the draft amendment. The Panel does note however that some members of the public appear to have a lack of information on the existence and actual meaning of marine farming development plans within potentially affected communities. The fact that a waterway is 'open for marine farming business' should be clear to the public. The Panel noted the increased efforts for information about marine farming to be made publically available, such as the provision of information on the EPA website and the inclusion of finfish farming information in the public planning and land information website 'The LIST'.

3.4.2 *Holistic impact assessment*

3.4.2.1 Background

Representors raised the following issues relating to the potential combined effects of all current marine farming planning proposals in Storm Bay:

- Suggestions about bioregional and ecosystem approaches to marine resource management, including marine farming planning.
- Concerns that combined effects of the three separate planning proposals on the natural or human environment may be greater than identified and described through any one process.
- Suggestions that the proposals should be progressed through a single, holistic planning process.

3.4.2.2 Discussion

The marine farming planning process is discussed under section 3.4.1 of this report and is relevant to discussion of the approach taken in relation to the three current planning processes.

The Act sets out the process for development and amendment of marine farming development plans and these processes are currently being progressed in respect of three separate applications, each relating to Storm Bay. The processes are:

- Amendment of two existing MFDPs
- Development of one new MFDP.

Each process proceeds on its merits, as assessed under the relevant provisions of the Act.

In its representation, EDO Tasmania requested that the Panel direct the PA to compile all relevant management controls for the plan into a single document, to allow ease of reference for the community, operators and regulators. In its Section 40 report, the PA indicated it was supportive of management controls being contained in a single document.

Section 2 of this report sets out the requirements under the Act, including the requirements of Section 21 and Section 22 of the Act which set out the things that a draft MFDP (and by virtue of section 32(2)(a), an amendment) must and may do.

This provides for the objectives of resource management, coordination with adjacent MFDP areas, and use and development of the region as an entity in environmental, economic, recreational and social terms to be considered in the assessment of a draft plan or amendment. In the Panel's view, each of these provisions is relevant to the issues raised in relation to holistic impact assessment.

The Panel recognises that both additive and synergistic cumulative effects may arise from the three proposed developments, as well as other existing and future anthropogenic activities. Synergistic cumulative effects may occur in relation to water quality, substrates and fauna and marine vegetation, as well as disease and biosecurity. Additive effects may occur also in relation to birds, marine mammals and threatened species and impacts on the human environment such as visual, navigation, noise, commercial and recreational fishing and other recreational activities.

Of the potential synergistic effects, the Panel considers water quality changes to be the primary means through which synergistic ecosystem impacts might occur. As detailed in 3.2.1 Water quality, 3.2.2 Substrates and fauna and 3.2.3 Marine vegetation of this report, monitoring and research at the regional level will help to inform the regulator of any changes that occur. The plan relevant to this proposal, as well as the existing and draft plans relating to the other two proposals, provide for water quality impacts to be limited through limits on dissolved nitrogen emissions, as detailed in 3.2.1 Water quality. In the context of the adaptive management framework that relates to the Storm Bay region and includes means to consider impacts in adjacent waterways, the Panel considers that appropriate mechanisms exist to manage any negative impacts, whether relating to a single proposed development or regional issues. The Panel noted the significant intensification of environmental monitoring underpinning adaptive management, as well as the increase in EPA Regulatory capacity. The Panel considers that while this adaptive management framework is in its early stages of implementation, development should proceed with caution, particularly in the absence of the biogeochemical model to inform the capacity of the system and linked systems to naturally attenuate impacts.

Representors raised concerns about regional biosecurity and disease management, questioning whether the biosecurity framework was adequate to minimise disease risks and avoid biosecurity issues such as have been encountered overseas. For discussion of disease and biosecurity issues in the regional context, see section 3.2.8 Disease and biosecurity.

Additive cumulative effects on other values in the natural environment, such as birds, marine mammals and threatened species are managed through application of best practice measures to minimise and mitigate interactions with and impacts on these species. These measures can be mandated directly through relevant legislation (such as the *State Nature Conservation Act 2002* and *Threatened Species Protection Act 1995* and/or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*, or through marine farming regulation, such as relevant management controls under the applicable MFDP or conditions on environmental licences.

In terms of additive cumulative effects on the human environment, these impacts are likely to be transient with the presence of marine farming infrastructure in the region; once activities are decommissioned and remediated, these effects would disappear. Additive visual effects are unlikely to be significant, given the visual controls that exist, the distances between sites and the elevation required to view more than one proposed development. The visual impact assessments included within each of the relevant EIS's demonstrates additive visual impacts are likely to be minimal.

Similarly, given the distance between sites and the exposed environment, noise generated within lease areas would be unlikely to have an additive impact on any human environments. Additive noise effects have been raised in relation to marine mammals (see 3.2.5 Marine mammals and 3.3.4 Noise), with a recommendation that baseline survey requirements should include a marine noise assessment (representation from EDO Tasmania). The Panel noted that as the EPA is responsible for determining baseline survey requirements and may regulate noise through environmental licences, the PA provided this recommendation to the EPA.

Noise generated outside lease areas, for example, by vessel movements, is a matter for the EPA and may also be regulated through an environmental licence.

Additive effects on navigation, commercial and recreational fishing and other recreational activities arise from the area that is occupied by marine farming infrastructure. Issues relevant to this proposal are considered in the relevant sections of this report, along with relevant recommendations in relation to management controls. The Panel expects that the recommended management control modifications would also have benefits in the context of the combined effects of the three current marine farming proposals and the use and development of the region.

3.4.2.3 Conclusion

The Panel has modified the draft amendment to:

- include all existing and new management controls within a single document;
- provide explicit description of an action the Secretary may choose to take in relation to single year-class stock management (see section 3.2.8 Disease and biosecurity of this report).

The consolidated and modified management controls are presented in Attachment A.

3.4.3 *Application of the Precautionary Principle*

3.4.3.1 Background

Representors emphasised the need to apply the precautionary principle in making a recommendation about the draft amendment.

3.4.3.2 Discussion

Section 21(1)(ga) of the Act requires the draft amendment to be consistent with State Policies made under section 11 of the *State Policies and Projects Act 1993*. Two State Policies are relevant to the determination. These are the State Coastal Policy 1996 and the State Policy on Water Quality Management 1997.

The State Coastal Policy 1996 requires that where a development may pose serious or irreversible environmental damage, then the precautionary principle will be applied to ensure that environmental degradation can be avoided, remedied or mitigated. The State Policy on Water Quality Management 1997 requires that the precautionary principle is applied to the management of pollutant discharges to surface waters, including coastal waters.

The precautionary principle means that where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:

- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
- (ii) an assessment of the risk-weighted consequences of various options.

The Precautionary Principle rose to prominence following its inclusion in the Rio Declaration on Environmental Development (Principle 15) which describes the precautionary approach and its use in the context of environmental conservation as, *“In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”*. Recent reviews confirm that identification of a threat, and determination that that threat is significant, should be key prerequisite steps in accepting the application of the Principle ²⁷.

A major characteristic of the precautionary principle is that it specifies that measures must be taken if there are threats of serious or irreversible environmental damage and these measures should be relaxed only if research demonstrates that they are not needed.

It is not consistent with the Principle to allow scientific uncertainty to negate the necessity to assess whether any particular action or event is a threat. Nor is it appropriate to assume that a threat, once identified, is sufficiently significant to uncritically trigger precautionary action. The need for precaution should not be used to provoke or justify an assumption that something is a threat without sufficient evidence. UNESCO 2005 states, *“Some form of scientific analysis is mandatory; a mere fantasy or crude speculation is not enough to trigger the Precautionary Principle”*

The National Strategy for Ecologically Sustainable Development (ESD) has three core objectives: 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.

The strategy is implemented under the guidance of a number of ecological and development principles. The ecological principles are:

- Decision making processes should effectively integrate both long and short-term economic, environmental, social and equity considerations
- Where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation, and
- The global dimension of environmental impacts of actions and policies should be recognised and considered.

The developmental principles are:

- The need to develop a strong, growing and diversified economy which can enhance the capacity for environmental protection should be recognised

²⁷ Kearney, R. et al. (2012). Questionable interpretation of the Precautionary Principle in Australia's implementation of 'no-take' marine protected areas. *Marine Policy* 36: 592–597

- The need to maintain and enhance international competitiveness in an environmentally sound manner should be recognised
- Cost effective and flexible policy instruments should be adopted, such as improved valuation, pricing, and incentive mechanisms, and decisions and actions should provide for broad community involvement on issues which affect them.

The strategy emphasises that a balanced approach is required for ESD and these guiding principles and core objectives need to be considered as a package. No objective or principle should predominate over the others.

Management judgements have to be based on the available scientific evidence of the risk being undertaken, and the levels of short and long-term impacts that are acceptable in the socio-economic as well as ecological areas.

The Panel considered the various pathways in which the draft amendment may impact on the environment. The Panel also considered the various pathways in which the draft amendment, in concert with the other proposed finfish developments in Storm Bay may impact on the environment. Additionally, the Panel considered the management protocols of the applicant as detailed in their EIS, the management controls applying in the existing Marine Farming Development Plan, and those proposed by the draft amendment; as well as the applicant's commitment to adaptive management. The Panel also considered the broader regulatory regime that will apply. The Panel modified the draft amendment to strengthen management of potential impacts to the environment. Having considered these pathways and available information on potential impacts, the Panel considers that the proposed expansion of salmon farming in Storm Bay is unlikely to cause serious environmental or irreversible environmental damage.

3.4.3.3 Conclusion

The Panel has assessed that the risk of significant or irreversible environmental damage as a result of the draft amendment, or in combination with the other marine farming proposals in Storm Bay is low in light of the management controls that are proposed in the modified draft amendment, the internal management protocols of the companies, as well as the broader regulatory arrangements for finfish farming in Tasmania.

3.4.4 *Moratorium*

3.4.4.1 Background

Six (6) representors expressed a desire for, or requested, a moratorium on one or more marine farming development and planning matters. Representors cited various reasons for desiring a moratorium, including:

- To see evidence the industry can be sustainably managed.
- To see an independent enquiry on the sustainability of the industry.
- For independent assessment of the impact of marine farming on marine and human environments.
- To allow for consultation with key stakeholders.

These comments relate to regulation frameworks, the effectiveness of regulation, and planning process and impact assessment. Some of these issues are also discussed under 3.4.1 marine farming planning process.

3.4.4.2 Discussion

The Panel noted that the Government released the *Sustainable industry growth plan for the salmon industry* (the Salmon Plan) in December 2017, which sets out the Government's vision for Tasmania's salmon industry. The Salmon Plan outlines the regulatory framework, which has recently been changed to give direct regulatory responsibility for environmental management of finfish farming to the EPA and legislating a process to create finfish marine farming exclusion zones. The Salmon Plan also outlines the marine farming planning process and opportunities for stakeholder engagement in planning processes. The Salmon Plan identifies the Storm Bay area as a proposed 'Grow zone'.

The Panel noted that the applicant undertook consultation with key stakeholders in developing its proposal. Information on the consultation undertaken is contained in section 4 of the applicant's EIS. The Panel makes no comment on the effectiveness of the stakeholder engagement as this will vary considerably amongst individuals consulted.

3.4.4.3 Conclusion

The Panel considers that a moratorium is a question for Government and is outside the scope of the current planning process.

3.4.5 Stakeholder consultation

3.4.5.1 Background

Representors raised the following concerns that there has not been adequate stakeholder engagement:

- Concern that the consultation period coincided with Christmas.
- Concern that stakeholders had not been genuinely engaged and consulted with by either the applicant or Government.
- Comment that the development of the 'Grow' zones in the *Sustainable industry growth plan for the salmon industry* were not developed through a public consultation process.
- TSIC requested the establishment of a forum for TSIC members to better understand salmon farm operations and future proposed farming locations.

3.4.5.2 Discussion

The Panel noted that the applicant has provided a summary of their stakeholder consultation activities in Section 4 of their EIS, including a summary of discussions and engagement outcomes with each stakeholder that was consulted. The Panel noted that the applicant had direct correspondence with potentially affected residents in the proposal stage through to application and beyond, and considers this appropriate. The Panel makes no comment on the effectiveness of the stakeholder engagement as this will vary considerably amongst individuals consulted.

The marine farming planning process is discussed in section 3.4.1 of this report – Marine farming planning process.

The Panel noted that the development of the *Sustainable industry growth plan for the salmon industry* included a seven week public consultation. A report on the consultation process, as well as all the feedback received, can be found at www.dpipwe.tas.gov.au/salmonplan.

The Panel noted that the draft amendment was exhibited in accordance with section 38 of the Act, for the maximum allowable period, between 18 November 2017 and 17 January 2018.

The Panel has considered twenty-six representations and heard from five representors at public hearings, in regard to the draft amendment.

3.4.5.3 Conclusion

As detailed in this report, the Panel has modified the draft amendment based on the merits of the views expressed by representors, and the recommendations of the PA. The consolidated and modified management controls are presented in Attachment A.

3.4.6 *Zone/ Lease size and location*

3.4.6.1 Background

Representors expressed the following views in regard to zone / lease size and location:

- New finfish farming development should be undertaken using land-based systems.
- The proposed Storm Bay sites are not 'offshore', new developments should be located further out to sea near the continental shelf.
- If new developments are approved, inshore leases should be relinquished.

3.4.6.2 Discussion

The Panel noted developments in land-based finfish farming and noted that the development of land-based finfish farming systems in Tasmania will be dependent on economic viability.

The Panel noted that the intent of the use of the term 'offshore' by the applicant reflects the exposure and high energy environment of the proposed East of Yellow Bluff Zone and Zones 1-4, rather than their proximity to the coast.

In accordance with the provisions of the Act, an amendment to a MFDP cannot delete a marine farming zone from the plan, or reduce the maximum leasable area within a marine farming zone. It is therefore not within the scope of the planning process to mandate removal of existing leases.

It is appropriate that the amendment is assessed on its merits in accordance with the Act.

3.4.6.3 Conclusion

The Panel has considered the draft amendment on its merits in making its determination.

3.4.7 *Tasmanian Brand*

3.4.7.1 Background

Representors were concerned that the existence of finfish farms in Storm Bay could impact on the Tasmanian or Bruny Island Brands which rely on the 'clean, green, natural image' e.g. through visual impacts of marine farming infrastructure, or through industry reputation of poor environmental performance.

3.4.7.2 Discussion

Consideration of concerns raised by representors about potential impacts on natural and human values that may contribute to the Tasmanian Brand has been detailed throughout sections 3.2 and 3.3 of this report.

3.4.7.3 Conclusion

The Panel concluded that the draft amendment is not incompatible with the Tasmanian Brand, however, strong industry environmental performance and compliance is key to maintaining the Tasmanian Brand, underpinning a strong tourism economy, as well as minimising impacts to environmental and social values and existing businesses in the region.

3.4.8 Additional recommendations of the Planning Authority

3.4.8.1 Background

Since the draft amendment was approved for exhibition, the *Finfish Farming Environmental Regulation Act 2017* has commenced, giving the EPA formal functions and powers in relation to environmental management of finfish farming. In light of these legislative changes, in its Section 40 report, the PA identified a number of changes to management controls that better reflect the new regulatory environment and responsibilities.

Additionally, the PA further reviewed existing management controls under the plan as well as the management controls proposed in the draft amendment and recommended a number of other minor changes to clarify and update the management controls that apply to this plan and the draft amendment. This included revising existing management controls in relation to interactions with wildlife. The PA recommended that additional function and rigour would be achieved by replacing existing controls 3.12.9 through 3.12.15 with two controls; one prohibiting deliberate interactions with wildlife; and the second requiring compliance with operational requirements issued by the Secretary.

3.4.8.2 Discussion

The Panel has considered the modifications recommended by the PA to reflect the changes to the regulatory environment and responsibilities resulting from the commencement of the *Finfish Farming Environmental Regulation Act 2017*. The Panel considers that these modifications are required.

The Panel has also considered the modifications to management controls 3.12.9 through 3.12.15 and considers that the changes are required.

3.4.8.3 Conclusion

The Panel has modified the draft amendment. With regard to section 37(3) of the Act, the Panel does not consider these modifications to be of a substantial nature. The consolidated and modified management controls are presented in Attachment A.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Principal Recommendation

Under section 41(2)(a) of the *Marine Farming Planning Act 1995*, the Panel has made a determination to recommend to the Minister for Primary Industries and Water, that the Storm Bay off Trumpeter Bay, North Bruny Island Marine Farming Development Plan July 1998, as modified, be accepted without change.

4.2 Additional Recommendations

In addition to the principal recommendation, the Panel provides the following additional recommendations and comments to the Minister relating to the approval of the draft amendment.

4.2.1 Environmental Monitoring

The Panel considers that the development of a biogeochemical model for Storm Bay and the Derwent Estuary is critical for the understanding of the environmental impacts and the future management of salmon farming through the adaptive management regime. The Panel also urges a strong commitment from the Government to the funding of this research and the environmental monitoring requirements.

The Panel also recommends that initially, the monitoring regime should be extensive and robust and continue until such time as there is sufficient confidence in the model that would permit a scaling back of the level of monitoring.

The Panel is of the view that a comprehensive monitoring program should include:

- water quality;
- sediment condition in lease areas;
- inshore and deep reefs; and
- intertidal areas.

The Panel further highlights the importance of the integrated monitoring program that includes additional water quality and physiochemical monitoring commensurate with potential risks at various operational phases.

To increase transparency the Panel recommends and supports endeavours by both operators and the Regulator to release performance and monitoring information.

4.2.2 Rate of Development

The Panel recommends that the EPA manage a conservative/cautionary approach to the rate of development with respect to levels of stocking in leases to ensure that the monitoring regime and adaptive management responses are not overtaken by unacceptable environmental impacts.

4.2.3 Biosecurity Management

The Panel considers biosecurity associated with disease outbreaks is at present the most critical issue being faced by the industry in Storm Bay as well as other salmon growing regions in the State.

The Panel noted that internationally, physical separation of companies; single year class stocking into specified sites; adequate fallowing regimes; and closed transport have proven to be effective measures for mitigating disease outbreaks.

The Panel has modified the draft amendment to strengthen biosecurity management arrangements to reduce biosecurity risks, including:

- mandating separation distances between fish of a different year class and fallowing periods;
- specifying how the Secretary may declare an area to be a single year class area and the consequent obligations of lease-holders; and
- strengthening planning arrangements through a requirement for licence applicants to provide evidence of a biosecurity and fish health plan and once granted, licence holders to operate in accordance with that Plan.

Having two existing and one proposed new Marine Farming Development Plan within Storm Bay presents major difficulties for both the Panel and the regulatory bodies. Best practice involves maximising the distance between year classes of fish and maximising the distance between companies. With potentially three plans and three companies, the only means that is available to achieve uniformity of biosecurity requirements across all of the Storm Bay Plans (and the companies) is by the actions of the Secretary/Director EPA/Chief Veterinary Officer through imposition of licence conditions and directives. Because of the different operational and management arrangements companies have for their respective areas, this would require a considerable degree of coordination and cooperation between all companies operating in Storm Bay.

In addition to the modifications made to the draft amendment, the Panel makes the following recommendations:

- the industry should aim to transition to using closed transport for fish transfers as soon as practicable; and
- of the salmonids, only Atlantic salmon should be allowed to be farmed in Storm Bay.

4.2.4 Planning for mass-mortality events

Mortalities are reported and managed under Environmental Licence conditions. While the Panel noted that management of single or minor multiple mortalities is well embedded, there is an absence of planning for waste management in the event of mass mortalities. The Panel recommends that the Biosecurity Plan should explicitly address how operators will deal with disposal of mortalities following a mass mortality event. This should include *inter alia* the method of containment, extraction, transport, waste treatment, waste disposal, and biosecurity measures that would be applied throughout these steps. While it is accepted that the circumstances for an actual mass mortality may alter this plan it is reasonable to expect due consideration of the basic process for waste management and the options for final entombment.

5 APPENDICES

APPENDIX A: STATEMENT OF REASONS FOR DETERMINATION UNDER SECTION 41(2)(a) OF THE MARINE FARMING PLANNING ACT 1995

Attachment A – Modification of Draft Amendment

Attachment B – Briefings to the Marine Farming Planning Review Panel

APPENDIX B: MARINE FARMING PLANNING REVIEW PANEL

APPENDIX A: STATEMENT OF REASONS FOR DETERMINATION UNDER SECTION 41(2)(a) OF THE MARINE FARMING PLANNING ACT 1995

I, Craig Midgley, Chairperson of the Marine Farming Planning Review Panel (the Panel), provide this statement of reasons for the determination of the Panel, under section 41(2)(a) of the *Marine Farming Planning Act 1995* (the Act), to recommend to the Minister for Primary Industries and Water (the Minister), that the Draft Amendment No.3 to the Storm Bay off Trumpeter Bay North Bruny Island Marine Farming Development Plan July 1998, as modified, be accepted without change.

A list of the members of the Marine Farming Planning Review Panel is provided in Appendix B.

Background

On 10 August 2017, the applicant, Huon Aquaculture Company Pty Ltd (Huon), requested under section 33 of the Act, that the Plan be amended.

The proposed amendment seeks to extend the Plan area to create a new marine farming zone ('Zone 5 – (Yellow Bluff)') with a maximum leasable area of 230Ha; and to extend the Plan area to modify four existing marine farming zones 1, 2, 3 and 4 – (south of Trumpeter Bay) by increasing the maximum leasable area from 50 to 75Ha for each zone, and rotating the zones by 18 degrees clockwise. The proposed amendment would increase the leasable area for salmonid farming operations within Storm Bay by 330Ha.

The applicant prepared an environmental impact statement (EIS) to accompany its request for an amendment to the Plan. This EIS accompanied the Draft Amendment prepared by the Planning Authority (PA). The EIS provides a description of the proposed amendment. It contains a description of existing environmental conditions, an assessment of the potential effects on those conditions as a consequence of the Draft Amendment and the proposed operations. It proposes mitigation measures and identifies any likely residual effects after mitigation.

Findings on Material Questions of Fact relating to the Determination

In making its determination to recommend to the Minister that the Draft Amendment be accepted without change, the Panel made the following findings of fact.

1. Pursuant to section 9(1) of the Act, the functions of the Panel are, amongst other things, to:
 - a. consider draft amendments to marine farming development plans; and
 - b. to consider environmental impact statements; and
 - c. to consider comments made on draft amendments; and
 - d. to make recommendations to the Minister in respect of draft amendments.
2. On 10 August 2017, Huon Aquaculture Company Pty Ltd requested, under section 33 of the Act, that the Plan be amended.
3. On 11 August 2017, and in accordance with section 33(3) of the Act, the Planning Authority (PA) recommended to the Panel that the Draft Amendment should be made.
4. On 29 August 2017 the Panel considered the recommendation of the PA under section 33(4) of the Act, and approved the making of the Draft Amendment under section 33(4)(a) of the Act.
5. On 5 September 2017, the Panel requested the Minister provide approval for the Panel to

direct the PA to prepare the Draft Amendment under section 33(5) of the Act.

6. The Minister's approval was given on 13 September 2017 and on 19 September 2017 the Panel directed the PA, in writing, to prepare the Draft Amendment under section 33(6)(a). The Panel also notified Huon Aquaculture Company Pty Ltd of its decision in writing on 19 September 2017 under section 33(6)(b) of the Act.
7. Section 17A of the Act came into effect on 4 December 2017. Sections 17A(5), 17A(6) and 17A(7) were not in effect at the time of the application or approval to prepare the Draft Amendment and the Director, EPA could not have issued a notice under section 17A(1).
8. Pursuant to section 23 of the Act, an Environmental Impact Statement (EIS) was prepared by Huon Aquaculture Company Pty Ltd to accompany the Draft Amendment, based on guidelines prepared by the PA.
9. On 17 October 2017, the Panel considered whether the Draft Amendment was suitable for exhibition by way of meeting the requirements of section 35(3) of the Act. The Panel considered that the Draft Amendment was not suitable for exhibition and pursuant to section 35(2)(b)(i) of the Act, the Panel altered the draft amendment as it considered necessary.
10. On 24 October 2017, pursuant to section 35(2)(a) of the Act, the Panel certified that the Draft Amendment, as altered, was suitable for exhibition, and referred it to the Minister for approval for it to be publicly exhibited.
11. The Minister approved the public exhibition of the Draft Amendment under section 38(1)(a) of the Act, on 13 November 2017.
12. The PA publicly exhibited the Draft Amendment, together with the EIS, between 18 November 2017 and 17 January 2018, in accordance with section 38(2) of the Act.
13. On 4 December 2017, the *Finfish Farming Environmental Regulation Act 2017* took effect which amends several Acts relating to the management of finfish farming activities, including the *Marine Farming Planning Act 1995*, and establishes Tasmania's *Environmental Management and Pollution Control Act 1994* (EMPCA) as the primary piece of environmental regulation legislation for finfish farming. The changes established the legal structure that now empowers the Director, EPA with an independent statutory role for the environmental regulation of the State's finfish farming industry, and established an Environmental Licence as a new regulatory instrument for finfish farming activities.
14. On 19 February 2018, in accordance with section 40 of the Act, the Panel resolved to provide a time extension to 9 May 2018, for the PA to forward its report to the Panel.
15. On 7 May 2018, the PA forwarded to the Panel a report in accordance with section 40 of the Act. The report contained:
 - a. a copy of each representation received;
 - b. a copy of each request for a hearing received;
 - c. a detailed response from Huon Aquaculture Company Pty Ltd in relation to major issues raised in each representation; and
 - d. the PA's statement of its opinion as to the merit of each representation and the impact on the draft amendment as a whole; and
 - e. recommendations in relation to the draft amendment

16. Twenty-six (26) written submissions were received in relation to the Draft Amendment, including twenty-five (25) which met the requirements of a 'representation' under section 39 of the Act. Ten (10) representors also requested a hearing pursuant to section 39(2)(c) of the Act.
17. On 9 May 2018, in accordance with section 17A(9) of the Act, the Panel provided to the Director, EPA, a copy of the report forwarded to the Panel under section 40 of the Act.
18. Pursuant to section 12(1B)(b) of the Act, on 24 February 2018, the Panel advertised by Public Notice, the dates, location and time of the hearing.
19. Pursuant to section 12(1B)(a) of the Act, on 8 March 2018, the Panel gave notice to each person who made a request for a hearing under section 39(2)(c) of the Act.
20. In accordance with the requirements of section 12 of the Act, the Panel held a hearing in public in Hobart, on 16 May 2018. Five (5) representors presented at a hearing.
21. The Panel also considered advice provided by the applicant at the request of the Panel following the hearings.
22. On 9 August 2018, in accordance with section 41(1)(a) of the Act, the Panel considered the Draft Amendment and the report prepared for it by the PA under section 40 of the Act. At the time of its consideration, there were no notices in effect under section 17A(1).
23. Having considered the Draft Amendment, the Panel determined to modify the draft amendment under section 41(2)(b) of the Act.
24. In accordance with section 41(3)(a), the Panel modified the Draft Amendment. The modification is presented in Attachment A.
25. The Panel also determined under section 37(3), that the modification to the Draft Amendment was not of a substantial nature.
26. In accordance with section 41(3)(b), on 10 August 2018 the Panel notified the PA in writing of its determination and the reasons for making it, and of the modification.
27. Having modified the Draft Amendment and having determined that the modifications were not of a substantial nature, the Panel continued its consideration of the Draft Amendment under section 41(1) of the Act.
28. In considering the Draft Amendment, and pursuant to section 32(2) of the Act, the Panel noted there were no notices in effect under section 17A(1) and determined that the Draft Amendment:
 - a. complies with sections 21 and 22 of the Act; and
 - ab. does not extend the area to which the plan applies in relation to finfish farming so as to include an area that is within a marine farming exclusion zone; and
 - b. does not delete a marine farming zone from the plan; and
 - c. does not reduce the maximum leasable area within a marine farming zone; and
 - d. does not have the effect of making existing marine farming in the area significantly less viable.
29. On 9 August 2018, the Panel determined, in accordance with section 41(2)(a), to recommend to the Minister that the draft amendment, as modified, be accepted without change.

Material on Which Findings Were Based

In making the determination to recommend to the Minister for Primary Industries and Water that the Draft Amendment be accepted without change the Panel relied on the following material.

1. The recommendation of the PA to the Panel, made in accordance with section 33(3) of the Act, that the amendment should be made;
2. The Draft Amendment;
3. The EIS prepared to accompany the Draft Amendment;
4. The report made under section 40 of the Act; and
5. The representations made at the hearing on 16 May 2018 in relation to the Draft Amendment;
6. Advice provided by the EPA and the PA at the request of the Panel.
7. Advice provided by the applicant at the request of the Panel.

Determination

Being satisfied that at the time of its consideration, there were no notices in effect under section 17A(1) and the Draft Amendment:

1. furthers the objectives of resource management within the area covered by the Draft Amendment; and
2. designates an area as a marine farming zone within the area covered by the Draft Amendment; and
3. specifies the area to which the Draft Amendment relates; and
4. is co-ordinated with any marine farming development plan applying to any adjacent area; and
5. has regard for the use and development of the region as an entity in environmental, economic, recreational and social terms; and
6. seeks a co-ordinated approach with respect to any matter affecting adjacent land under the jurisdiction of the Marine and Safety Authority or council; and
7. has regard to the biological and physical requirements of fish species to be farmed in that area; and
8. provides for any other matter which the Act requires to be included in a marine farming development plan; and
9. is consistent with State Policies made under section 11 of the *State Policies and Projects Act 1993*; and
10. contains any matter the Panel requires;
11. does not extend the area to which the plan applies in relation to finfish farming so as to include an area of State waters, or an area that adjoins State waters, that is within a finfish marine farming exclusion zone under section 19A;
12. does not delete a marine farming zone from the plan;
13. does not reduce the maximum leasable area within a marine farming zone; and

14. does not have the effect of making existing marine farming in the area significantly less viable; the Panel accordingly determined, under section 41(2)(a) of the Act, to recommend to the Minister for Primary Industries and Water that the Draft Amendment No. 3 to the Storm Bay off Trumpeter Bay North Bruny Island Marine Farming Development Plan July 1998, as modified, be accepted without change.

A handwritten signature in black ink, appearing to read 'Craig Midgley', written in a cursive style.

CRAIG MIDGLEY

CHAIRPERSON

MARINE FARMING PLANNING REVIEW PANEL

22 August 2018

Attachment A – Modification of Draft Amendment

On 9 August 2018, the Panel made a determination to modify the draft amendment under section 41(2)(b) of the *Marine Farming Planning Act 1995*.

In accordance with section 41(3) of the Act, the Panel modified the draft amendment, and notified the Planning Authority in writing, on 10 August 2018, of its determination and the reasons for making it. The Panel modified the draft amendment by replacing the words from page 10 of the draft amendment onwards, with those described in Annexure A. Annexure A incorporates the following three types of change:

- Consolidation of the management controls from the Marine Farming Development Plan and its various historical amendments into the draft amendment.
- Changes resulting from the need to reflect the new regulatory environment and responsibilities resulting from the *Finfish Farming Environmental Regulation Act 2017* having taken effect, as well as other minor changes to clarify and update existing management controls (shown underlined text).
- Changes resulting from the Panel's consideration of matters raised by representors through written submissions and at the hearings (shown in **bold, italicised** text) being:
 - Those recommended by the PA through its s.40 report to the Panel (with some minor wording changes for clarity), so as to address the issues raised;
 - Strengthening of biosecurity management arrangements, to reduce biosecurity risks, including:
 - mandating separation distances between fish of a different year class and fallowing periods,
 - specifying how the Secretary may declare an area to be a single year class area and the consequent obligations of lease-holders,
 - strengthening planning arrangements through a requirement for licence applicants to provide evidence of a biosecurity and fish health plan and once granted, licence holders to operate in accordance with that Plan;
 - The requirement to provide additional detail in the reporting requirements of the type of therapeutant use;
 - Providing the Director of the EPA the ability to impose a remediation or monitoring plan at the cessation of marine farming;
 - Reducing the 25kg/m³ stocking density to a level more in line with industry standards;
 - Changes requiring the provision of evidence that systems securing marine farming equipment are appropriate for the expected risks associated with the occupation of the lease area; and
 - The requirement of notification of potential navigational hazards to the appropriate authority.

The Panel determined under section 37(3) of the Act, that the modification was not of a substantial nature. Accordingly, the Panel determined that it was appropriate for it to modify the draft amendment.

Annexure A

Section 3 of the Storm Bay off Trumpeter Bay North Bruny Island Marine Farming Development Plan July 1998 is amended to reflect the following changes.

3 Management Controls

Prepared in accordance with section 24 of the *Marine Farming Planning Act 1995*, management controls must contain any measures necessary to manage and mitigate negative effects which marine farming operations may have within the plan area.

3.01 Lessees and sub-lessees must comply with any written notice or request given by the Secretary, and must not undertake or cause or permit another person to undertake an activity contrary to the Secretary's written notice or request.

3.02 Lessees and sub-lessees must comply with any written notice or request given by the Director, EPA, and must not undertake or cause or permit another person to undertake an activity contrary to the Director EPA's written notice or request.

3.03 In these management controls:

'Chief Veterinary Officer' has the meaning given by section 3 of the *Animal Health Act 1995*.

'Director, EPA' has the meaning given by section 3 of the *Marine Farming Planning Act 1995*.

'environmental licence' means an environmental licence issued under Division 8 of Part 3 of the *Environmental Management and Pollution Control Act 1994*.

'EPA' means the Environment Protection Authority established by section 12 of the *Environmental Management and Pollution Control Act 1994*.

'inspector' has the meaning given by section 3 of the *Animal Health Act 1995*.

'Manager, Marine Farming Branch', means the person occupying the position of that title within the Department, or any other position notified by the Secretary.

'Marine and Safety Authority' has the meaning given by section 3 of the *Marine Farming Planning Act 1995*.

'marine farming licence' means a marine farming licence issued under Part 3 of the Living Marine Resources Management Act 1995.

'notifiable disease' means a List A or List B disease under Part 5 of the Animal Health Act 1995.

3.1 General Controls for all Marine Farming Zones

3.1.1 There must be no significant visual, physio-chemical or biological impacts at or extending 35 metres from the boundary of the lease area, unless otherwise specified by the Director, EPA. ~~as specified in the relevant marine farming licence.~~

3.1.2 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, or in the relevant environmental licence.

3.2 Controls Relating to Nitrogen Outputs from Finfish Farming

3.2.1 The Director, ~~Environmental Protection Authority~~ EPA, may, from time to time, determine the total permissible dissolved nitrogen output (TPDNO), within specified periods, attributable to licenced finfish farming for a specified area. ~~Licensed finfish marine farming operations (ie; carried out under a licence issued under Part 4 of the Living Marine Resources Management Act 1995), for a specified area.~~

3.2.2 A specified area may constitute:

- An area or multiple areas covered by this plan, or
- All the area covered by this plan

3.2.3 For the purpose of assessing quantities of dissolved nitrogen output attributable to ~~Licensed finfish marine farming operations~~, the Director, EPA may use any method that the Director, EPA is satisfied delivers a proper measure of total dissolved nitrogen output from finfish ~~marine farming operations~~.

3.2.4 On making a determination under 3.2.1, the Director, EPA is to apportion the TPDNO, or a portion of the TPDNO, between the leaseholders ~~Licensed for finfish marine farming operations~~ within that specified area or if a lease is sub-leased, any sub-lease holders within the specified area.

3.2.5 An individual apportionment made under 3.2.4 may be nil.

3.2.6 An individual apportionment made under 3.2.4 may be made in respect of two or more leaseholders, as if they were a single leaseholder.

3.2.7 On the making of an apportionment under 3.2.4, the Director, EPA is to notify each of the relevant leaseholders or if a lease is sub-leased, any sub-lease holders, in writing of the individual apportionment made in respect of that leaseholder or sub-lease holder.

3.2.8 A leaseholder or if a lease is sub-leased, any sub-lease holder, notified in accordance with 3.2.7 must comply with that notice.

3.2.9 In this section:

'Finfish farming' has the same meaning as section 5C of the *Environmental Management and Pollution Control Act 1994*.

'Licenced' in relation to finfish farming means authorised under a licence issued under Division 8 of Part 3 of the *Environmental Management and Pollution Control Act 1994*.

3.3 Environmental Controls Relating to Carrying Capacity

3.3.1 The maximum permissible stocking density of salmonid fish is ~~25 kg/m³~~ **15 kg/m³** of caged volume unless otherwise specified in the marine farming licence.

3.3.2 Maximum permissible stocking densities for other finfish species may be specified in the conditions of the relevant marine farming licence or environmental licence licence conditions.

3.3.3 Lessees must ensure that farmed areas are fallowed as soon as practicable if bubbles of hydrogen sulphide and/or methane gases form in the sediment and rise to the surface without physical disturbance of the seabed.

3.3.4 Finfish cage nets must be at least 1 metre clear of the seabed at low tide under normal growing conditions unless otherwise specified in the relevant marine farming licence.

3.3.5 The ~~Secretary-Director, EPA~~ may from time to time, using whatever information the ~~Secretary-Director, EPA~~ considers appropriate, determine the maximum permissible biomass (~~tonnes per hectare~~) of finfish that may be stocked within the area covered by this plan or any other specified area within the plan area.

NOTE: Maximum permissible biomass may relate to an area however described by the Director, EPA, including without limitation, tonnes per hectare or total tonnes for the plan area.

3.3.6 The ~~Secretary-Director, EPA~~ is to give notice in writing to any lessees, or if a lease is sub-leased, any sub-lessee, subject to a determination made by the ~~Secretary-Director, EPA~~ under ~~3.3.2~~ or 3.3.5 and specify the date from which the lessee or sub-lessee must comply with the ~~Secretary's-Director EPA's~~ determination.

3.3.7 Compliance with 3.3.5 will be calculated for any point in time, according to the following formula, or any other method deemed by the ~~Secretary-Director, EPA~~ to be equal to it, or better.

- Total Biomass (TB) = Total biomass in tonnes of finfish held by lessees or sub-lessees within the determined area at a single point in time.

- Total Area (TA) = Combined total lease area Licenced for the farming of finfish held by lessees or sub-lessees within the determined area at that same point in time.
- TB/TA must be no greater than the maximum permissible biomass, in tonnes per hectare, as determined by the ~~Secretary~~ Director, EPA.

3.4 Environmental Controls Relating to Monitoring

Baseline environmental survey requirements

3.4.1 Lessees must provide a baseline environmental survey to the satisfaction of the Director, EPA ~~as specified by the Secretary. A Such a~~ baseline environmental survey must be undertaken prior to the commencement of marine farming operations on those areas;

- where a new lease area is being established; or
- when required as a condition of varying or expanding a lease area; or
- where a marine farming licence is varied to allow the farming of another species not addressed by the existing baseline survey for the lease.

~~Data to be collected may include but is not limited to video assessment, sediment particle size analysis, redox potentials, sulphides, current flows and composition of the benthic community.~~

Note: The ~~Secretary~~ Director, EPA will use the information from the baseline environmental survey, amongst other information, to assess whether the area to be farmed contains any rare or endangered species or any unusual habitat and to determine ~~marine farming licence conditions and requirements relating to environmental management.~~

Environmental monitoring requirements

3.4.2 Lessees must keep the following records for each lease area held by the lessee and retain these records for a period of 5 years:

3.4.2.1 Lessees or sub-lessees ~~subject to determinations made by the Secretary under 3.3.2, or 3.3.5~~ must maintain daily records capable of demonstrating the:

- maximum stocking density of finfish in each stocked cage;
- maximum biomass of finfish in each stocked cage.

3.4.2.2 The type, origin and dry weight of food placed into a lease area on a monthly basis.

3.4.2.3 The names and quantities and date of use, of all chemicals which have been used on a lease area. This must include, but is not confined to, therapeutants,

anaesthetics, antibiotics, hormones, pigments, antifoulants, disinfectants and cleansers.

- 3.4.2.4 Location (to a degree of precision to the satisfaction of the Secretary), size and stocking rates of all cages.
- 3.4.2.5 The duration that individual cages are held in a particular location.
- 3.4.3 Lessees must provide to the Manager, Marine Farming Branch, ~~Department of Primary Industries, Water and Environment~~ the records detailed at 3.4.2 at the request of the Secretary.
- 3.4.4 Lessees must notify the Manager, Marine Farming Branch ~~Department of Primary Industries, Water and Environment~~ within 48 hours of using any therapeutants including antibiotics but excluding vaccines. Information provided to the Manager, Marine Farming Branch must include:
 - 3.4.4.1 The names of therapeutants (***including trade name and concentration of active ingredient***).
 - 3.4.4.2 The date of use.
 - 3.4.4.3 The location (to a degree of precision to the satisfaction of the Secretary) and identification of the specific cage / cages in which therapeutants have been placed.
 - 3.4.4.4 The quantities of therapeutants placed into specific cages.
- 3.4.5 Environmental data is to be collected at each finfish lease area and analysed to specific standards and in accordance with the requirements for collection, reporting and analysis as specified in the relevant marine farming licence or environmental licence.

~~Note: The Secretary will use the information from the environmental monitoring surveys when determining marine farming licence conditions.~~

- 3.4.6 Lessees must comply with any environmental monitoring, data analysis, interpretation, audit and review requirements determined by the ~~Secretary~~Director, EPA or Secretary and notice of which is given in writing, as amended by the ~~Secretary~~Director, EPA or Secretary from time to time, at the lessee's expense using such parties as are approved or nominated by the ~~Secretary~~Director, EPA or Secretary.
- 3.4.7 The Secretary may require from time to time, by notice in writing, a lessee, at the lessee's expense, or a sub-lessee, at the sub-lessee's expense, to engage an independent auditor determined by the Secretary, to undertake an audit, as specified by the Secretary, of a lessee or sub-lessee's business records, and record keeping practices.
- 3.4.8 An audit undertaken under 3.4.7 may include an assessment of the accuracy and truthfulness of records with respect to the physical parameters being recorded under

3.4, for the purposes of determining compliance with any management control or licence condition.

3.4.9 The ~~Secretary~~ Director, EPA may require from time to time, by notice in writing, a lessee, at the lessee's expense, or a sub-lessee, at the sub-lessee's expense, to engage a specified consultant, scientific institute, or other entity acceptable to the ~~Secretary~~ Director, EPA, to conduct environmental monitoring and/or modelling ~~for the purpose of reviewing or predicting the environmental effects of marine farming within the area covered by this plan in accordance with any requirements of, and to the satisfaction of, the Director, EPA.~~

3.4.10 For leases that have an associated marine farming licence authorising the farming of finfish, lessees or sub-lessees must provide to the Secretary on an annual basis, unless exempted in writing by the Secretary, a production planning report for three years in advance, by lease.

3.5 Chemical Controls

3.5.1 All chemical use must comply with the requirements of the *Agriculture and Veterinary Chemicals (Control of Use) Act 1995*.

3.6 Controls on Waste

3.6.1 Lessees must dispose of wastes from:

- harvesting;
- processing of produce;
- removal of fouling organisms; and
- production,

in accordance with relevant Acts or regulations and tradewaste agreements and in a manner that the Secretary is satisfied will not cause an unacceptable effect on the ecology of the marine environment or nearby shorelines.

3.6.2 All marine farmed fish mortalities must be disposed of, according to relevant Acts and local council by-laws.

3.6.3 The licence holder must ensure that blood resulting from the harvesting of fish is fully contained and not allowed to enter the marine environment unless authorised in writing by the Chief Veterinary Officer and the Director, EPA.

3.6.4 Lessees must fallow or comply with limits upon the use of a lease area if unacceptable benthic impacts specified in the relevant marine farming licence or environmental licence are identified through routine monitoring.

3.6.5 Lessees must ensure that Black and Grey Water resulting from the servicing of marine farming operations is not released into the marine environment unless otherwise authorised ~~a marine farming licence~~.

3.7 Disease Controls

- 3.7.1 Lessees must notify ~~Department of Primary Industry, Water and Environmental~~ inspector of any suspicion of a notifiable disease in accordance with the *Animal Health Act 1995*.
- 3.7.2 Lessees must remove dead fish from cages **and report mortalities** in accordance with any direction from the Secretary or Director, EPA.
- ~~3.7.4~~ 3.7.3 Lessees must participate in any fish health management plan or fish biosecurity program as directed in writing by the Chief Veterinary Officer or ~~Director Marine Resources~~ Secretary.
- 3.7.4 In making any application for the grant, renewal or variation of a marine farming licence relating to finfish, a lessee is to provide evidence to the satisfaction of the Secretary of a biosecurity and fish health plan relevant to the species to be farmed and proximity to other marine farming areas.**
- 3.7.5 It is a condition of a marine farming licence issued following the provision of evidence under 3.7.4 that the licence holder at all times operates in accordance with that biosecurity and fish health plan.**
- 3.7.6 Unless otherwise authorised in writing by the Secretary, a licence holder who farms Atlantic salmon must:**
- 3.7.6.1 maintain physical separation between fish of different year classes at a distance no less than 4km.**
 - 3.7.6.2 maintain physical separation between fish of the same year class but stocked outside the “window period” at a distance of no less than 3km.**
 - 3.7.6.3 not place Atlantic salmon smolt into a zone if Atlantic salmon of a different year class have been held within 4km of that zone at any time within the previous eight (8) weeks.**
 - 3.7.6.4 not place Atlantic salmon into a zone if Atlantic salmon of a different year class have been held within 4km of that zone at any time within the previous six (6) weeks.**
- 3.7.7 The Secretary may, from time to time, determine an area to be a single year class area for one or more species of fish.**
- 3.7.8 Upon making a determination under 3.7.7, the Secretary is to notify any leaseholders within the area that is the subject of the determination or, if a relevant lease is sub-leased, any sub-lessees, of the determination.**
- 3.7.9 A leaseholder or, if a lease is sub-leased, any sub-lessees notified in accordance with 3.7.8 must not possess more than one year class of a relevant fish species within that single year class area.**

3.7.10 A leaseholder, or if a lease is sub-leased, any sub-lessees notified in accordance with 3.7.8 must only introduce relevant fish to the lease area during any period specified by the Secretary.

3.7.11 A leaseholder, or if a lease is sub-leased, any sub-lessees notified in accordance with 3.7.8 must remove all relevant fish from the lease area before any date specified by the Secretary.

3.7.12 The Secretary is to ensure that any determinations under this management control have regard to and are coordinated with any adjacent marine farming development plan areas.

3.7.13 For the purposes of these management controls:

‘relevant fish’ means any species of fish that is the subject of a determination by the Secretary under 3.7.7.

‘single year class area’ means an area determined by the Secretary to be a single year class area under 3.7.7.

‘year class’ means those fish first placed into State waters within a calendar year.

‘window period’ is the period in which smolt are transferred to the relevant site and is not more than 4 months.

3.8 Visual Controls

3.8.1 Lessees must ensure that all marine farming structures and equipment on marine farming lease areas conform to the following controls:

3.8.1.1 All fish cages, buoys, netting and other floating marine farming structures and equipment on State waters, other than that specified for navigational requirements, must be grey to black in colour, or be any other colour that is specified in the relevant marine farming licence.

3.8.1.2 Marine farming structures and equipment must be low in profile and be of a uniform size and shape to the satisfaction of the Secretary. The Secretary will determine what constitutes a low profile and uniform size and shape.

~~**3.8.1.3 Floating storage huts, grading facilities and shelters must not be located within a lease area unless authorised under the relevant marine farming licence.**~~

~~**3.8.1.4**~~ **3.8.1.3 Lessees are to ensure, to the satisfaction of the Director, EPA, that light generated from marine farming operations does not create a nuisance. ~~The Secretary will determine what constitutes a nuisance.~~**

3.9 Access Controls

- 3.9.1 Lessees must mark the external boundaries of the lease area in whatever manner is required by the Secretary and by the ~~relevant authority under the provisions of the Marine and Safety Authority Act 1997~~ Marine and Safety Authority.
- 3.9.2 Lessees must identify the lease area in a manner specified by the Secretary.
- 3.9.3 Anchors and mooring lines that extend outside the lease area must be at least 5 metres below the surface at the boundary of the lease area and must not extend outside a marine farming zone.

3.10 Odour Controls

- 3.10.1 Lessees ensure, to the satisfaction of the Director, EPA, that odour generated from marine farming operations does not create an odour nuisance. ~~The Secretary will determine what constitutes a nuisance.~~

3.11 Fish Escapes

- 3.11.1 Lessees must not intentionally release into State waters fish of the species authorised in the relevant marine farming licence.
- 3.11.2 Lessees must report to the Manager Marine Farming Branch any significant incident of fish escapes within 24 hours of becoming aware of the escape. A significant escape is defined as any loss of Licenced species to the marine environment in excess of 500 individuals at any one time.
- 3.11.3 Lessees must recover escaped fish when and in a manner as directed by the Secretary.

3.12 Other Controls

- 3.12.1 Lessees must comply with the *Marine Farming Planning Act 1995* and with any other Act or regulations that may affect the lease area or the marine farming operations in that lease area.
- 3.12.2 Lessees must comply with guidelines on noise emissions ~~made pursuant to the Environmental Management and Pollution Control Act 1994~~ issued by the EPA for marine farming operations.
- 3.12.3 Lessees must maintain marine farming structures and equipment in a serviceable condition on lease areas held by them.
- 3.12.4 Lessees must remove fouling organisms from marine farming equipment, as directed by the Secretary or Director, EPA, in a manner that the Secretary or Director, EPA is satisfied will not cause an unacceptable effect upon the ecology of the marine environment or nearby shorelines.
- 3.12.5 Lessees must remove redundant, dilapidated or loose marine farming structures and equipment from ~~the lease area~~ **State waters** as directed by the Secretary.

- 3.12.6 If any part or parts of marine farming structures or equipment break away from the lease area, lessees must take action as soon as is reasonably possible to recover those structures and equipment and return them to the lease area or otherwise dispose of them in an appropriate manner.
- 3.12.7 Lessees must permit ~~the Minister, or~~ persons authorised by ~~the Minister~~ Secretary or Director, EPA, to enter into and inspect the lease area at all reasonable times.
- 3.12.8 Lessees must comply with all lawful written requirements of the ~~Minister~~ Secretary, or the Director, EPA.
- ~~3.12.9 Lessees must notify the Nature Conservation Branch of the Department of Primary Industries, Water and Environment in the event that any marine mammals are found entangled in marine farming equipment.~~
- 3.12.9 Lessees must not undertake or cause or permit another person to deliberately interact with Specially Protected, Protected or Partly Protected Wildlife (as defined in the Wildlife (General) Regulations 2010) wildlife except in accordance with the Nature Conservation Act 2002 and regulations made thereunder.
- 3.12.10 Lessees must comply with any operational requirements notified by the Secretary in relation to managing, mitigating or avoiding interactions with Specially Protected, Protected or Partly Protected Wildlife (as defined in the Wildlife (General) Regulations 2010) wildlife as defined by the Nature Conservation Act 2002.
- ~~3.12.10 Lessees must ensure that any predator control of protected wildlife (within the meaning of the Wildlife Regulations 1999) is conducted with the approval of the Manager of the Nature Conservation Branch of the Department of Primary Industries, Water and Environment or any other person acting on that person's behalf and in the case of seals in accordance with relevant seal interaction management protocols of the Department of Primary Industries, Water and Environment.~~
- ~~3.12.11 Where bird netting is deployed lessees must ensure that nets are made of netting of a maximum 115mm square mesh and conform to the visual controls at section 3.8.~~
- ~~3.12.12 Lessees must ensure that avifauna entangled in bird netting is removed as soon as is practicable following entanglement.~~
- ~~3.12.13 Feeding of seals must not occur in any marine farming zones or marine farming lease areas covered by this marine farming development plan.~~
- ~~3.12.14 Baited trap lines or "tease lines" may only be deployed by an officer employed in the Nature Conservation Branch, Department of Primary Industries, Water and Environment or officers or a person(s) who holds a permit to do so under the Wildlife Regulations 1999.~~
- ~~3.12.15 Lessees must ensure that bird netting is maintained clear of the water to ensure that it does not become a hazard to marine fauna.~~

- 3.12.11** *The Secretary may, from time to time, determine requirements for the marking and monitoring of marine farming equipment.*
- 3.12.12** *Upon making a determination under 3.12.11, the Secretary is to notify any lease holders or, if a lease is sub-leased, any sub-lessees of the determination.*
- 3.12.13** *A lease holder or, if a lease is sub-leased, any sub-lessees notified in accordance with 3.12.12 must comply with that notice.*
- 3.12.14** *Vessels, other than vessels that enter the lease area on a transient or itinerant basis, must not be located within a marine farming lease area unless authorised under the relevant marine farming licence.*
- 3.12.15** *A lessee who becomes aware of a potential hazard to navigation must, as soon as practicable after becoming aware of the hazard, notify the Marine and Safety Authority and take any other action directed by the Marine and Safety Authority and / or considered necessary by the lessee.*
- 3.12.16** *In making any application for the grant or renewal of a marine farming licence, a lessee is to provide evidence to the satisfaction of the Secretary that the systems, capabilities and equipment applied or to be applied by the lessee, or sub-lessee are appropriate to the risks associated with occupation or activity under the lease, including (and not limited to), vessels, moorings, preparedness for unexpected events, training and practice, recovery and salvage and any matters, and/or to any standards specified by the Secretary.*
- 3.12.17** *In making any application for the variation of a marine farming licence to authorise a vessel under 3.12.14, a lessee is to provide evidence to the satisfaction of the Secretary that the systems, capabilities and equipment applied or to be applied by the lessee, or sub-lessee are appropriate to the risks associated with location of the relevant vessel within the lease area, including (and not limited to) preparedness for unexpected events, training and practice, recovery and salvage and any matters, and/or to any standards specified by the Secretary.*
- 3.12.18** *It is a condition of a marine farming licence issued following the provision of evidence under 3.12.16 and/or varied following the provision of evidence under 3.12.17, that the licence holder at all times maintains the systems, capabilities and equipment to the standard on which the evidence was based.*
- 3.12.19** *For the purpose of assessing compliance with 3.12.18, the Secretary may require from time to time, by notice in writing, a licence holder, at the licence holder's expense, to engage a specified person or other entity acceptable to the Secretary, to review the systems, capabilities and equipment applied at that time or any earlier time and provide an opinion as to whether they meet or met the standard on which the evidence was based.*

3.12.20 At the cessation of marine farming and in the event the holder of the Environmental Licence is unable or unwilling to remediate or monitor the lease area, the Director EPA may impose a remediation or monitoring plan.

Special Management Control

3.13 Zone 1, 2, 3 and 4 – (south of Trumpeter Bay)

3.13.1 Within Zone 1, 2, 3, and 4, an area or areas that, in total, do not exceed 50 ha in each zone, are to be known as the farmed areas.

The farmed areas may be defined by coordinates, physical markers visible on the water surface or as otherwise specified in the relevant marine farming licence.

3.13.2 Within Zone 1, 2, 3 and 4, the lessee is to ensure that all marine farming equipment is contained within the farmed area(s), unless otherwise specified in the relevant marine farming licence.

Marine farming equipment is contained in the farmed area if:

- Equipment that is present on or above the water surface is only in the farmed area;
- Equipment that is less than 5 metres below the surface of the water is only in the farmed area.

3.13.3 The lessee must mark any area or marine farming equipment within Zone 1, 2, 3 and 4 in whatever manner is required by the Secretary and by the Marine and Safety Authority.

3.13.4 The leaseholder of any marine farming lease allocated within the Zone 1, 2, 3 and 4 shall provide unrestricted access to the public to that section of the lease that is not:

- the farmed area; and
- any other area specified in the relevant marine farming licence.

Attachment B – Briefings to the Marine Farming Planning Review Panel

Briefing from the Applicant - Panel Meeting of 29 August 2017

The applicant provided background to their proposed MFDP amendment and accompanying EIS and took questions from the Panel.

Panel Field Trip – 23 April 2018

Panel members attended a field trip accompanied by two representatives from DPIPWE and a representative from each of the companies proposing finfish farming expansion in Storm Bay. The field trip provided an opportunity for Panel members to view the proposed marine farming zones from the water, to view existing marine farming operations in Storm Bay, and to ask any questions of the representatives of each proponent.

Briefing from the Chief Veterinary Officer - Panel Meeting of 23 April 2018

DPIPWE's Chief Veterinary Officer, Rod Andrewartha, briefed The Panel on biosecurity in the Storm Bay region. Discussion included;

- Appropriate separation distances between companies based on international comparisons and the different pathogen risks
- The lack of international standards in relation to separation distances across the known different pathogen risks
- Water (pathogen) circulation based on modelling work within Storm Bay including seasonal variations
- The application of best international practices including the stocking of single year classes in Storm Bay

Briefing from IMAS - Panel Meeting of 23 April 2018

Dr Catriona MacLeod and Dr Jeff Ross (Institute of Marine and Antarctic Studies) briefed the Panel on the current FRDC Project 24 including key outputs that will inform future management in Storm Bay. They also gave an overview of biogeochemical monitoring and modelling work that is being developed to inform future management and planning in the Storm Bay region.

Briefing from company representatives from Tassal, Huon Aquaculture and Petuna – Panel Meeting 19 July 2018

The Panel was provided a briefing by the respective company representatives on issues/developments relating to biosecurity within the proposed Storm Bay expansion area.

APPENDIX B: MARINE FARMING PLANNING REVIEW PANEL

The Marine Farming Planning Review Panel (the Panel) is a statutory body established by the Marine Farming Planning Act 1995.

Section of the Marine Farming Planning Act 1995	Panel Member
s.8(2)(a) Chair person	Craig Arthur Midgely
s.8(2)(b) a person with ability and experience in planning issues nominated by the Chairperson of the Tasmanian Planning Commission	Pamela Scott*
s.8(2)(c) a person with ability and experience in environmental management.	Louise Cherrie
s.8(2)(ca) a person with ability and expertise in fish health and biosecurity	Professor Barbara Nowak
s.8(2)(d) a person with ability in marine resource management.	Professor Colin Buxton
s.8(2)(e) a person with ability to assess boating, recreational and navigational issues.	Vacant*
s.8(2)(f) a person with experience in marine farming	Pheroze Jungalwalla
s.8(2)(fa) a person with expertise in local government issues.	Neil McLarty Campbell
s.8(2)(g) a person nominated by the Minister.	Heather Chong

Not all members were able to participate in the marine farming planning review process. Those members who did not participate in the process are marked with an asterisk in the table above. Section 3 of the Act stipulates that a quorum of five Panel members must be met to transact any business of the Panel. Whilst not all members were able to participate in formulating the determination, the quorum was met.

Disclosure of interests

A member of the Marine Farming Planning Review Panel (Panel) has a statutory requirement under the *Marine Farming Planning Act 1995* (the Act) to disclose the nature of any interest that would conflict with the proper performance of the member's duties in relation to a matter being considered or about to be considered by the Panel. Where such a conflict arises, the Act requires that the member must disclose the nature of the interest at a meeting of the Panel. A disclosure is then required to be recorded in the minutes of the meeting and the member must not, unless the Panel determines otherwise, take part in any decision of the Panel in respect to that matter. Further, for the purpose of making a determination by the Panel, a member who has a direct or indirect pecuniary interest in the matter, must not take part in the determination [Schedule 2 – Membership of Panel, s.6 (see excerpt below)].

In a practical sense, this is addressed through the maintenance of a register of pecuniary interests and as a standing agenda item for each meeting of the Panel. At the beginning of each meeting, the Panel Chairperson asks members whether, since the previous meeting they may have acquired any new interest that may be related, or perceived to be related, to their role on the Panel which needs to be added to the Register. Additionally, members are asked whether they have any interest related to any agenda item for that meeting. Newly appointed Panel members are required to have recorded on the Register, any interest prior to their first meeting.

No Panel member had a conflict of interest in relation to the draft amendment.

Marine Farming Planning Act 1995 - SCHEDULE 2 - Membership of Panel

6. Disclosure of interests

(1) If a member has or acquires an interest that would conflict with the proper performance of the member's duties in relation to a matter being considered or about to be considered by the Panel, the member must disclose the nature of that interest at a meeting of the Panel.

(2) A disclosure under sub clause (1) is to be recorded in the minutes of the meeting of the Panel and the member, unless the Panel otherwise determines, must not –

- (a) be present during any deliberation of the Panel with respect to that matter; or
- (b) take part in any decision of the Panel with respect to that matter.

(3) For the purpose of making a determination by the Panel under sub clause (2), a member who has a direct or indirect pecuniary interest in the matter to which the disclosure relates must not take part in making the determination.