

Natural Resources and Environment Tasmania – Generic Environmental Impact Statement Guidelines (Finfish)

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ABBREVIATIONS

Populate the abbreviations and glossary tables with additional information as necessary

AGD	Amoebic Gill Disease
ADCP	Acoustic Doppler Current Profiler
CAMBA	China-Australia-Migratory-Bird-Agreement
Director, EPA	Director, Environment Protection Authority
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DO	Dissolved Oxygen
EPA	Environment Protection Authority
EIS	Environmental Impact Statement
FCR	Feed Conversion Ratio
GDA	Geocentric Datum of Australia
JAMBA	Japan-Australia-Migratory-Bird-Agreement
MFPA	<i>Marine Farming Planning Act 1995</i>
NRE Tas (Department)	Department of Natural Resources and Environment Tasmania
Panel	Marine Farming Planning Review Panel
Plan	Marine Farming Development Plan
PA	Planning Authority (Secretary, NRE Tas)
PS	Proposal Summary
PSEG	Proposal Specific Environmental Impact Statement Guidelines
ROKAMBA	Republic-of-Korea-Australia-Migratory-Bird-Agreement

GLOSSARY

Activity	The proposed marine farming development/operation for the proposal
Applicant	A person who makes a request to the planning authority, in a form approved by that authority, to request that a marine farming development plan be amended.
Consequence	The outcome of an event (including one of more occurrences of the event or even consist of something not happening) affecting objectives. It can be certain or uncertain, have positive or negative effects on objectives, and be expressed qualitatively or quantitatively.
Cumulative effects	<p>Cumulative effects can be of four general types: additive, synergistic, antagonistic (compensatory) and masking. As a minimum, the likely additive and synergistic cumulative effects of a proposal should be considered.</p> <ul style="list-style-type: none">• Additive effects are the sum of effects of two or more individual pressures/stressors acting together. E.g. potential impacts to birds, marine mammals, visual amenity, navigation, noise levels.• Synergistic (or amplifying) effects magnify the consequence of individual pressures/stressors to produce a joint consequence that is greater than their additive effects (or risks). E.g. changes to water quality, benthic sediments and habitat.
Impact pathway	The route/s or mode/s, whether direct or indirect, by which a stressor may affect a given value. For example, the stressor 'marine debris' affects the value 'marine mammals' by the 'impact pathway' of entanglement.
Likelihood	Is the chance of something happening and can be measured objectively or subjectively, qualitatively or quantitatively. It is used with the same broad interpretation as 'probability'.
LISTmap	An online map viewer that enables a user to view or create custom maps of Tasmania, using a variety of authoritative land and water-based information.
Near, intermediate and far field	Near field (or near and/or local scale) means the area from source up to 500m, intermediate field means the area between 500m and 5,000m and far field means the area greater than 5,000m from source.
Proponent	A person who will derive direct benefit from a proposed amendment to a marine farming development plan. A proponent may become an applicant on making a request to the planning authority, in a form approved by that authority, to request that a marine farming development plan be amended.

Proposal	<p>The proposed planning outcome, in terms of its:</p> <ul style="list-style-type: none"> • Location • Plan area • Zone(s) • Maximum leasable area • Permitted categories of fish for culture • Draft management controls
Risk	<p>Is the effect of uncertainty on objectives. It is often expressed in terms of a combination of the consequences of an 'event' or 'events' and the associated likelihood of the consequences actually occurring.</p>
Stressor	<p>The physical, chemical or biological factors that can cause an adverse effect on ecosystem performance.¹ Stressors may be natural or anthropogenic in origin.</p>
Value/s	<p>That which is held to be important about the marine environment, expressed in terms of ecological, economic and social values. Values may arise from a person's use (amenity) or the marine environment's intrinsic properties/nature.²</p>

¹ Adapted from ANZECC 2000, volume 1, *Australian and New Zealand Guidelines for fresh and marine water quality*, ANZECC.

² Ogier, E. and Macleod, C.K. 2013, *Your Marine Values – Public Report 2013*, IMAS Technical Report 120pp, UTAS

INTRODUCTION

The *Marine Farming Planning Act 1995* (MFPA) provides for a person to:

- Apply to the Minister for approval to prepare a draft marine farming development plan (Plan). Figure 1 outlines the processes leading to the making of a new Plan.
- Request an amendment to a Plan. Figure 2 outlines the processes leading to an amendment to a Plan.

An environmental impact statement (EIS) is to accompany an application to prepare a new Plan, and a request to prepare a draft amendment to an existing Plan.³ The purpose of an EIS is to assist the Marine Farming Planning Review Panel (Panel) and the public to understand the potential environmental effects of implementing a draft new Plan, or draft amendment to an existing Plan, to the extent that is reasonable and practicable for informed decision making.

The EIS must:

- Disclose any available information relating to the environmental impact of the proposed amendment, except if there are reasons of confidentiality, in which case this information may be disclosed on a confidential basis.
- If it relates to finfish farming, address any matter relating to environmental management that is required by the Director, EPA (Director).
- Contain information appropriate and sufficiently detailed to the significance of the proposed amendment to the environment and likely public interest.

Prior to lodging an application to prepare a new draft Plan, or a request for an amendment to a Plan, the proponent must contact the Planning Authority (PA) to discuss the proposal. At this stage, the PA will provide the proponent with a Proposal Summary (PS) template, containing a description of the type of information required. The proponent will then prepare a draft PS and submit this to the PA for review prior to finalising.

If the General Manager, Marine Resources determines the PS is satisfactory⁴, then the PA will prepare proposal specific EIS guidelines (PSEG), using this 'generic EIS guideline' as a template. Note that this generic EIS guideline may be added to or subtracted from depending on the characteristics of the marine farming proposal and prevailing marine farming planning requirements.

To compile the PSEG the PA will seek comment from the Panel, and if the proposal relates to finfish farming, the Director EPA, in relation to the proposal and the content of the PSEG. The PA will then finalise the PSEG and forward this to the proponent.

The PSEG will identify and clarify issues associated with the proposal as outlined in the PS. The PSEG should not be interpreted as excluding from consideration other matters that could be significant, or matters of significance that emerge from environmental studies, public comments or other sources during the preparation of the EIS.

³ Except in circumstances where the Panel recommends that an amendment is to correct an error, is not of a substantial nature or is to remove any anomaly or clarify or simplify the MFDP.

⁴ A satisfactory PS must be included as an attachment to, or incorporated within, the EIS.

The proponent should consult closely with NRE Tas during preparation of the EIS. A draft EIS is required for review by NRE Tas prior to its finalisation. NRE Tas may return draft documents without detailed review and comment if the documents are incomplete, contain significant formatting or typographical errors or do not adequately address the PSEG. More than one draft may be necessary before the PA is satisfied that all matters specified in the PSEG have been addressed.

Once the PA has determined the EIS is satisfactory and subsequently notified the proponent of this, the proponent may then formally [apply for approval to prepare a new Plan](#) pursuant to the MFPA. In the case of a new Plan, the Minister may grant the application, and the PA will notify the Panel of this within 14 days of the Minister's decision. The PA will then commence preparing a draft Plan in accordance with the provisions in Part 3-Division 1 of the MFPA.

In the case of a draft amendment, the PA will forward the [request to amend an existing Plan](#), accompanied by the EIS, to the Panel, together with the recommendation of the PA as to whether the amendment should be made. The Panel will consider the request in accordance with the MFPA and determine whether to approve or refuse the making of an amendment. If approved, and subject to the consent of the Minister, the PA will prepare a draft amendment for submission to the Panel.

The PA may use information within the EIS to assist with preparation of a new draft Plan, or a draft Plan amendment.

Figures 1 and 2 flow chart the processes that lead to the submission of a PS and subsequent processes for the making of a new Plan, or a draft Plan amendment.

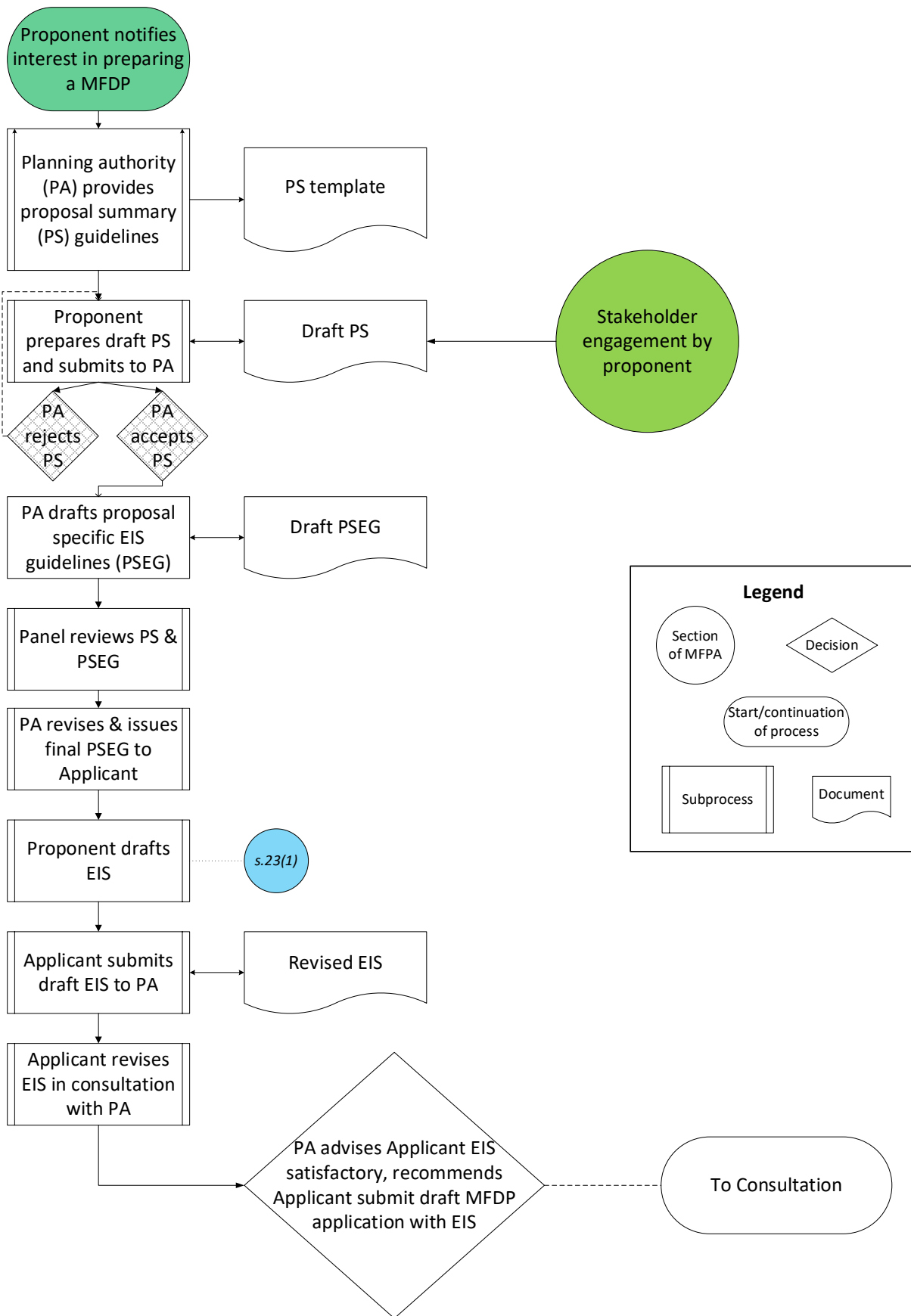


Figure I – Processes leading to the submission of an application to make a new Plan

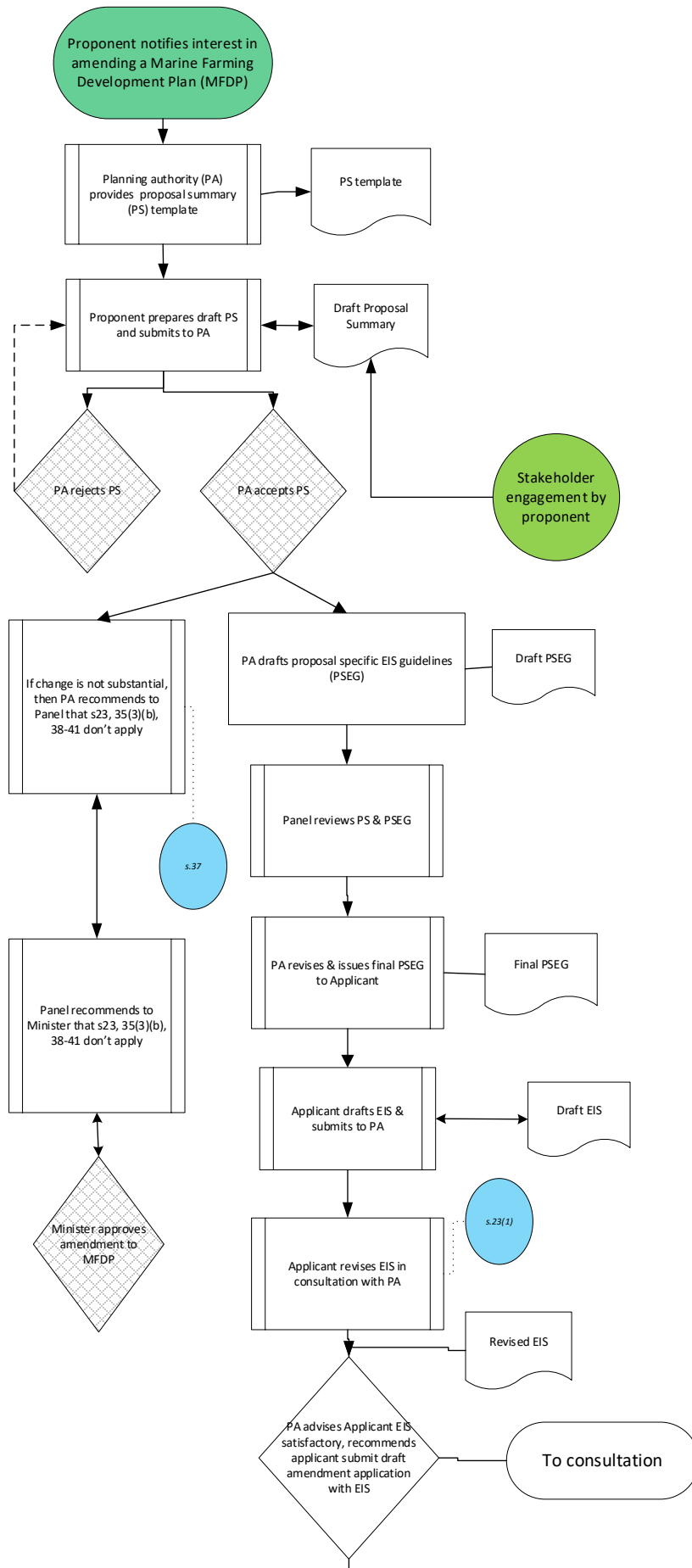


Figure 2 – Processes leading to submission of a request to amend an existing Plan

The PA recommends that proponents familiarise themselves with the provisions of the MFPA pertaining to the making of a new Plan, or the amendment of an existing Plan, in particular:

- Sections 15 to 31 (new Plan)
- Sections 32 to 42 (draft Plan amendment)

STRUCTURE AND FORMATTING

The proponent should format the EIS according to the layout of the section headings in this generic EIS guideline. For comparative purposes, and as an additional guide to preparing an EIS, copies of previous EIS's for existing Plans can be provided electronically on request.

The proponent should also consider the following, general points when drafting the EIS:

- All sources of information should be properly referenced. The proponent should also ensure any statements of fact which may relate to issues outside of the proponent's field of expertise are appropriately referenced and documented, and that referenced material is available for review.
- All paragraphs should be numbered for ease of reference. Numbering should follow I, I.I, I.I.I and so on.
- Where appropriate, information should be presented on maps, diagrams and site plans. All geographical information should be provided and presented in a format compatible with ESRI GIS products, such as ArcGIS Pro.
- Where appropriate, information provided in other sections should be cross-referenced to limit duplication.
- The EIS should include a summary table to show how it complies with the PSEG.
- Submit the EIS in an electronic format for use with Microsoft Word, using Gill Sans MT as the font throughout the document.

CONTENTS OF THE EIS

The draft EIS must consider and contain details relating to the following matters associated with the proposal:

- Values (refer [Section 4](#))
- Stakeholder engagement and analysis (refer [Section 5](#))
- Existing environment, including zone assessment survey (refer [Section 6](#) & [Attachment 2](#))
- Use of an appropriate risk assessment methodology to evaluate the risks to natural and physical resources posed by the proposed development. The methodology must be consistent with the risk management approach illustrated in Figure 3 of this Guideline, and the reference tables provided in Attachments 5 – 9 (refer [Section 7](#))
- Results and discussion of any studies or investigations stipulated by the PSEG. The proponent should draw on such information (evidence) when determining risk events, and ascribing likelihood and consequence levels (refer [Section 7](#))
- An appraisal of the significance of the potential impact of the development on values, following implementation of mitigation/control measures (refer [Section 7.1](#))

1 Table of Contents

Provide a table of contents, with reference to the relevant page numbers. A list of figures, tables and any appendices should be included where appropriate.

2 Executive Summary

This section should provide a clear and concise overview of the proposal and its environmental implications. It should contain headings corresponding to the main section headings of the EIS. The executive summary should be no more than two pages in length.

2.1 Proposal Description

2.2 Stakeholder Engagement and Analysis

2.3 Existing Environment

2.4 Assessment of Potential Impacts (localised and regional)

2.5 Conclusions

3 Proposal Description

The proponent should insert in this section the following information from its PS as accepted by the PA, subject to any updates or changes that become necessary as information arises in the course of preparing the EIS. Any such changes after the PSEG is issued should be clearly identified.

- Entirety of **Proposal Description** and **Activity Description - Overview - Stakeholder Engagement & Analysis**
- The proposal description needs to present information relating to all aspects of the operation of the proposed development with a sufficient level of detail to reasonably demonstrate the proposed zone/s can be effectively used.

4 Values

Drawing on the reference table⁵ of values listed in Attachment I, briefly describe the values that may be relevant to and influenced by the proposed activity (either positively or negatively). The proponent is also encouraged to refine the group of listed values and identify any protected environmental values based on the results of its stakeholder engagement process, and its own reference sources and expertise.

Where the proponent intends to remove, or substitute one or more of the values published in the reference table at Attachment I of this document, it must present an appropriate case for doing so.

Values should be grouped into the following categories; environment, economic, recreation, social structures & amenity, cultural and natural heritage, climate change, waste streams and reputation and image. Some examples are given below.

Environment: healthy substrates, clean marine water, clean freshwater, impacts on natural values (i.e. seabirds, shorebirds, marine mammals, handfish etc)

Economic: employment, access, benefits to the State

Recreational: access, navigation safety/amenity

Social structures & amenity: lifestyle quality/amenity, aesthetics, human health

Cultural and natural heritage: cultural practices/lifestyle (e.g. fishing), indigenous structures and artefacts

On occasions where the proponent considers the proposal will not, or is unlikely to, affect a value described at Attachment I, the reasons for this should be fully described and discussed. It is recommended the proponent include this information in the EIS as an appendix.

5 Stakeholder Engagement & Analysis - Results

Discuss the nature and results of stakeholder engagement and analysis conducted by the proponent during the formulation and planning of the proposed new Plan, or Plan amendment, and preparation of the EIS. In addition, outline any proposals for further engagement and stakeholder analysis during and beyond implementation of the new Plan or Plan amendment (e.g. stakeholder engagement strategy, stakeholder engagement events, major outcomes of stakeholder engagement).

⁵ The reference table of values has been compiled from:

- Ogier, E. and Macleod, C.K. 2013, *Your Marine Values – Public Report 2013*, IMAS Technical Report 120pp, UTAS
- *Risk Assessment – Permission System* (Document No. 100429), Revision 1, 2017, Great Barrier Reef Marine Park Authority
- Marine farming planning processes overseen by the Panel

6 Existing Environment

This section should describe the existing environment of the plan area and associated region in terms of its physical and biological conditions/characteristics and recognised marine values (refer Attachment 1).

Section 6 will be tailored to a specific proposal. The spatial extent of the proposed plan area will be informed by the PS prepared by the proponent. Specific needs under this section will be subject to input, advice and requirements from the EPA.

Describe the zone location/s and provide an overview of the region's existing environment which may be affected by the proposed development. The section should include details of the most important features of the existing environment and, where appropriate, include tables, maps, plans, photographs, diagrams and other descriptive detail.

6.1 Biological and Physicochemical Attributes – Proposed Zone/s and Buffer Areas

6.1.1 Zone characteristics

Using the zone assessment survey, characterise the nature of the proposed zone/s and buffer areas.

Provide a summary of the survey results using tables, maps and photographs where appropriate. Include a copy of the full survey report as an attachment to the EIS.

The proponent may elect to undertake elements of the zone assessment fieldwork and analysis, in which case specifications will be issued by NRE Tas.

6.2 Biological and Physical Attributes – Region

This section must include information about the environment, identified by survey or likely to be present based on habitat assessment, that the proposal may interact with within the zone or on a regional scale, including:

- *Hydrology* (refer Attachment 2)
- *Water quality* (refer Attachment 2)
- *Fish*⁶
- *Birds*
 - Include a description of any migratory bird species listed under international agreements, such as JAMBA/CAMBA/ROKAMBA.⁷

⁶ Has the same meaning as defined in Part 1 – Division 1 – s4 of the LMRMA.

⁷ Refer list of abbreviations.

- Provide the following details to inform about potential bird interactions with fish farming operations including, but not limited to:
 - Known roosting, nesting/breeding and feeding sites
- *Marine mammals*

Notes

Targeted environmental surveys may be required to collect information for this section. Proponents should be familiar with the requirements of the document [Guidelines for Marine and Estuarine Natural Values Surveys](#) published by NRE Tas . Survey methodology should be developed in consultation with the PA.

Ensure that any land-based elements/components, such as sea eagle nests and shearwater, penguin and seal colonies, are considered as part of any natural values survey. Ensure that species are identified to the lowest taxonomic level possible.

For each of the above fauna and flora types, identify and describe any threatened species presently listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) and Tasmanian *Threatened Species Protection Act 1995* (TSPA).

6.3 Reservations

Describe any reserved land within the proposed zone/s and surrounding area that the proposal may interact with at a regional scale, including:

- World Heritage Areas
- Ramsar sites
- Marine Reserves
- National Parks
- Other conservation areas

6.4 Land Planning Aspects

This section must include information about aspects related to land use planning for land (including State and Commonwealth waters) adjacent to the proposed zone/s or land required to be used to support operation of the zone/s.

6.4.1 Land Tenure, Zoning and Uses

Using the *LISTmap*, and liaising with a local government planner where necessary, provide the following information related to land use planning and the proposed development, including:

- Land tenure and property boundaries of any land adjacent to the proposed zone/s or associated operating area, with title details
- Local government planning scheme zoning of any land adjacent to the proposed zone/s
- Location of individual residences and other similar sensitive uses
- Location of any tourist or recreation facilities or routes, such as camping and picnic areas, walking tracks, and historic routes

- Any proposed sensitive uses within the surrounding area of the proposal site and associated operating area for which planning approval has been granted.

6.5 Maritime Aspects

This section should include information about commercial shipping and recreational boating channels and transit areas, commercial and recreational fishing activities and other recreational activities in the proposed zone/s, surrounding area including associated operating area.

6.5.1 Commercial Shipping

Provide the following information relating to commercial shipping and the proposed development, including but not limited to:

- A map to show commercial shipping channels relative to proposed zone/s
- Types of commercial vessels and their frequency of movement

6.5.2 Recreational Boating

Provide the following information relating to recreational boating and the proposed development, including but not limited to:

- A map showing any:
 - identified recreational boating transit lines, including recognised yacht race routes
 - recognised anchorages/moorings

6.5.3 Commercial and Recreational Fishing

Provide the following information relating to commercial and recreational fishing and the proposed development, including but not limited to:

- Types of fishing activity. The proponent should contact in writing, the Fisheries Monitoring section of Marine Resources, NRE Tas, to request commercial fishing information including fishing areas (blocks), species and catches, across the different State commercial fisheries. The Australian Fisheries Management Authority (AFMA) should similarly be contacted for the equivalent information on Commonwealth managed fisheries. The Institute of Marine and Antarctic Studies (IMAS) website contains a host of stock assessment reports across many of the State fisheries. This resource should be utilised to assist in the proponent's request of NRE Tas - http://www.imas.utas.edu.au/research/fisheries-and-aquaculture/publications-and-resources/_nocache
- Target species
- Location/s of fishing activity, including any recognised fishing areas nearest the proposed site

6.5.4 Existing Marine Farming Areas

- Provide information about existing marine farming areas and marine farming activity in the region that may interact with, or be affected by, the proposed development.

6.5.5 Recreational Activities

Provide the following information relating to recreational activities and the proposed development, including but not limited to:

- Range/types of recreational activities undertaken within the vicinity of the proposed zone/s or the surrounding area
- Details about parts of the coastline that may interact with, or be affected by, activities in the proposed zone/s, such as beaches, inlets, lagoons and bays, that are used for recreational activities
- Details about land or marine-based wildlife spotting activities conducted within the proposed zone/s or the surrounding area

6.6 Cultural and Natural Heritage

This section should include information about cultural heritage values within and around the proposed zone/s. Consideration must be given, but is not limited to:

- Aboriginal heritage
- Natural and built heritage, including declared World Heritage Areas

6.6.1 Aboriginal Heritage

Provide information about Aboriginal heritage within and around the proposed zone/s. Land-based and aquatic values must be considered.

The status of existing or pending permit applications, made under the *Aboriginal Heritage Act 1975*, should be given.

Prior to conducting a survey, the proponent is required to liaise with the Tasmanian Aboriginal Lands Council, Tasmanian Office of Aboriginal Affairs, Aboriginal Heritage Tasmania, as well as with Aboriginal communities to determine the regulatory requirements for heritage values, places and landscapes. As a minimum, the proponent must conduct a desktop aboriginal heritage assessment.

6.6.2 Natural and Built Heritage

Provide information about natural and built heritage within and around the proposed zone/s.

Consider the proposed development in relation to:

- Whether any approvals are required under the *Historic Cultural Heritage Act 1995*
- Any place listed on Australia's National Heritage List
- Places listed on the Tasmanian Heritage Register (maintained by the Tasmanian Heritage Council), including consideration of cultural landscapes
- Places on the Tasmanian Historic Places Inventory (maintained by the Parks and Wildlife Services)
- Local government planning scheme heritage schedules, including Cultural Landscape Areas, Heritage Area/Precinct and Heritage Places

- Any other places of heritage significance, such as any places listed on Australia’s World Heritage List and Australia’s Commonwealth Heritage List

6.7 Socio-economic Aspects

This section should include information about the social and economic environment that may be affected by the proposed development, including but not limited to:

- A summary of the social/demographic characteristics of the population living in the vicinity of the proposal site. Identify any special characteristics which may make people more sensitive to impacts from the proposal than might otherwise be expected
- A summary of the characteristics of the local and regional economy (e.g. existing employment and industry trends, land values)
- A summary of the tourism activities and operations within the region including:
 - land-based – e.g. hospitality sector businesses, cultural heritage, lookouts, walks and treks
 - marine-based – e.g. wildlife spotting, boat cruises, seaplane flights, SCUBA diving, sea kayaking, water skiing, surfing

6.8 Matters of National Environmental Significance

The proponent should state in this section whether it has, or intends to, refer the proposal to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEW) for a decision by the Minister (refer Attachment 9 for advice on addressing this section).

7 Assessment of Potential Impacts

In this section the proponent should adopt an appropriate risk-based approach to evaluate the risks to natural and physical resources posed by the proposed development. The recommended method for risk assessment, within the risk management process, is outlined in Figure 3 and described in more detail below.

The preferred format for recording and evaluating risks is provided at Attachment 3.

Note: The PA will consider alternative formats to record, evaluate and discuss risks to that provided at Attachment 3. Any alternative format, however, should follow a recognised methodology and be consistent with the risk management approach illustrated in Figure 3 below, and the tables provided in Attachments 1, 4 - 8. Any alternative format should clearly show (in terms of risk levels and scores) how fish farming events & activities may influence marine values by considering:

- Stressors
- Impact pathway/s
- Potential impacts
- Avoidance & mitigation measures

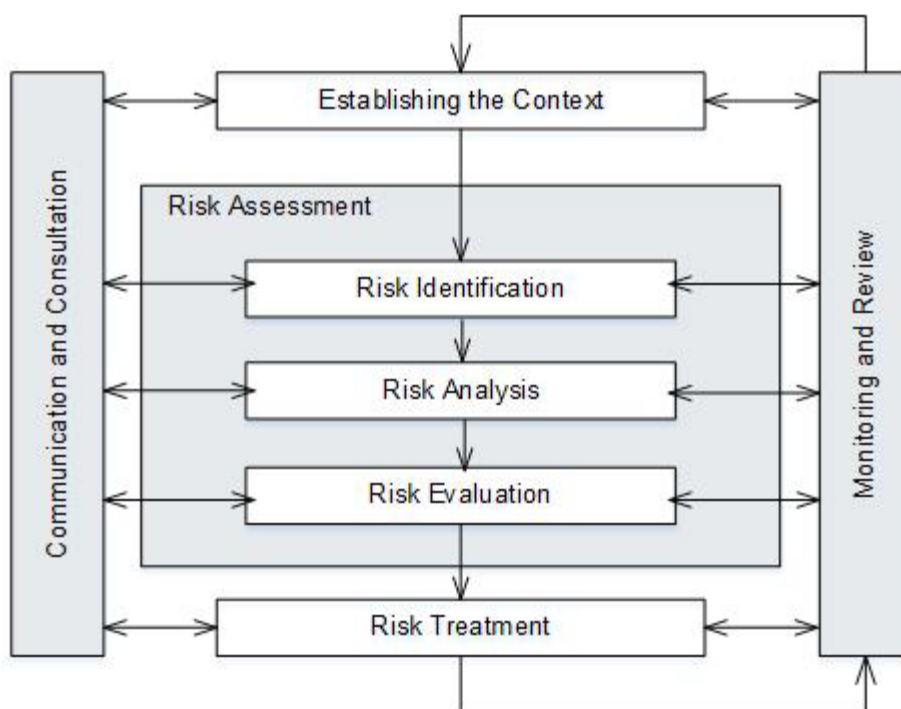


Figure 3 – Summary of risk management approach⁸

⁸ Fletcher, R 2014 *Review and refinement of an existing qualitative risk assessment method for application within an ecosystem-based management framework* ICES J. Marine Science 14 pp

With reference to Figure 3, for each category identified in Section four of this guideline, populate the worksheet/table provided at Attachment 3. Completed worksheets should be included in the EIS as attachments. Each part of the worksheet is described in further detail below.

In addition to considering all available and relevant sources, the risk assessment is to account for the following matters for the listed categories and associated values (Table 1).

ENVIRONMENT	
Values	Considerations
Water quality/clean water	<ul style="list-style-type: none"> • Are nutrient emissions associated with the proposal likely to adversely affect the assimilative capacity of the environment at local and regional scales?
Benthic habitat (sediments & fauna)	<ul style="list-style-type: none"> • What is the predicted fate and distribution of soluble and particulate nutrient emissions from the proposal? • What are the predicted levels of physical/chemical and biological water quality indicators relative to existing background levels, and what are the predicted locations of any accumulation/pooling of these parameters? • What is the predicted ecological response and the significance of this response?
Marine vegetation	<p><u>Notes</u></p> <ul style="list-style-type: none"> • Contemporary information and available modelling tools must be used to evaluate effects on water quality, benthic habitat (sediments and fauna) and marine vegetation on a local and regional basis at seasonal and long-term scale.
Biological diversity (phytoplankton, in-fauna, fish, sponges, macrophytes, etc)	<ul style="list-style-type: none"> • Is there an understanding of habitat types within the zone? • Using appropriate metrics, what are the anticipated impacts of the proposal on 'biological diversity' at near-field, intermediate and far-field scales? <p><u>Notes</u></p> <ul style="list-style-type: none"> • Proponent must assess potential impacts on biological diversity from nutrient emissions, waste streams, chemicals and noise.
Chemicals/additives	<ul style="list-style-type: none"> • What is the proposed usage of chemicals including antifoulants, therapeutants (such as antibiotics) and disinfectants? Proposed therapeutants should be identified as to whether they are products registered for use in salmonids, products covered by a minor use permit for use in salmonids, products registered in other species which will be used off label under veterinary prescription, or unregistered products for use under veterinary prescription where no other product is available. • Assess recognised localised and system-wide effects of chemical usage on water quality, the benthic environment and other fauna <p><u>Notes</u></p>

	<ul style="list-style-type: none"> • EIS should include a management plan specific to the management of chemicals and environmental consequences of usage and chemical waste management.
Biosecurity & disease control	<ul style="list-style-type: none"> • Include information on how the proponent intends to manage marine pest biosecurity. Information on water flow is important to assess where potential impacts may occur, e.g. spread of marine pests. • Discuss the need for distance of separation of proposed lease site/s, with justification in support of the level of separation where relevant. Hydrodynamic modelling of the area may be used in support of proposed level of separation. • Assess potential vectors for disease to be spread to or from the proposed development, for example, through the supply chain, through the natural environment (for example, wild fish) and through other human activities (such as recreational fishing, other marine farming). • In relation to finfish health, the following operational questions should be addressed, including: <ul style="list-style-type: none"> ○ Smolt vaccination protocol ○ Year class separation ○ Fallowing ○ Fresh water quality if contaminated by agricultural runoff ○ Expected water temperatures ○ Bloodwater ○ Mortalities, including procedures for routine mortalities and contingencies for mass mortality events ○ Movement of finfish between locations and associated measures to reduce associated risks of disease spread ○ Measures to mitigate introduction of diseases (include here separation from existing marine farming areas – both physical separation and management separation – e.g. management of boats moving between marine farming areas)
Light	<ul style="list-style-type: none"> • A desktop assessment is required to investigate potential effects of artificial light (including underwater lights) within the zone/lease areas on sensitive receptors including marine fauna (e.g. marine mammals, seabirds and sharks). The potential effects of artificial lighting (on sensitive receptors) from vessels likely to be moored or transiting proposed lease areas must also be considered.

Noise	<ul style="list-style-type: none"> List and describe all major sources of underwater noise, including the operation and movement of vessels and other types of water-based equipment, and identify any areas where underwater noise from the proposal could impact on marine fauna in terms of, but not limited to, breeding, feeding and migratory behaviours. <p><u>Notes</u></p> <ul style="list-style-type: none"> Where potential impacts to marine fauna from underwater noise cannot be considered unlikely, then a technical assessment is likely to be required by the EPA.
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SOCIAL STRUCTURES & AMENITY

Values	Considerations
Noise	<p><u>Above water</u></p> <ol style="list-style-type: none"> List and describe all major sources of above water noise, including the operation and movement of vessels and other types of water-based equipment, their likely impacts in terms of intensity, frequency and duration, and the area (near, intermediate or far field) over which they occur. Consider the potential for noise to cause environmental nuisance. Identify all noise sensitive premises with potential to be affected by the proposed development and operating areas. From this, discuss the need or otherwise for technical assessment of above water noise, with due regard to Part 5 of the <i>Tasmanian Environment Protection Policy (Noise) 2009</i>. Where technical assessment is considered necessary, refer to part (d) below and Part 5 of the <i>Tasmanian Environment Protection Policy (Noise) 2009</i>. Using manufacturers specifications and/ or other credible reference sources, provide estimates of sound emission (sound power levels) for all major noise sources. From this, provide estimates of the resulting noise levels at relevant noise sensitive premises. State whether or not the resulting noise levels are likely to comply with the following noise limits: <ol style="list-style-type: none"> 45 dBA from 0700 – 1900hrs (daytime) 40 dBA from 1900 – 2200hrs (evening) and 35 dBA from 2200 – 0700hrs (night time)

	<p>where there is an established or pre-existing level of local noise (e.g. proposal is near commercial or industrial activities)</p> <p>or</p> <ol style="list-style-type: none"> a. 45 dBA from 0700 – 1900hrs (daytime) b. 37 dBA from 1900 – 2200hrs (evening) and c. 32 dBA from 2200 – 0700hrs (night time) <p>in quiet areas (e.g. proposal is well separated from commercial or industrial activities)</p> <p>e) Where an estimated noise level is within 5 dBA of its relevant noise limit, provide a proposal for post-commissioning noise testing (e.g. noise survey).</p>
Light	<ul style="list-style-type: none"> • A desktop assessment is required to investigate potential effects of artificial light originating from the proposed lease and transiting/moored vessels on sensitive receptors (e.g. local residents) • Consider the potential for light emissions to cause environmental nuisance.
Odour	<ul style="list-style-type: none"> • A specific odour impact assessment may be required for the proposed zone/s. • Consider all potential sources of odour emissions within the zone and associated with servicing and operating the zone. • Consider the potential for odour emissions to cause environmental and health effects.
RECREATION	
Values	Considerations
Odour	Refer Odour above
WASTE STREAMS	
Values	Considerations

Effective waste management	<ul style="list-style-type: none"> • Proponent must identify the sources and estimated quantity (mass loads) of solid and liquid waste generated at sea and demonstrate that all reasonable measures have been taken to avoid producing each type of waste and to reduce the amount of waste requiring disposal, having regard to best practice environmental management. • Aspects to be considered must include: <ul style="list-style-type: none"> ○ Mortalities, including effect of mass mortality events ○ Soluble and solid waste streams from land-based maintenance of nets ○ Bloodwater (include details of proposed method of finfish harvest and any associated management issues, e.g. where finfish harvest will take place and how blood water will be disposed of) ○ Bathing water and in situ cleaning (the EIS should evaluate how bathing water and in situ waste may be contained or inactivated in order to avoid the build-up in concentration of marine pests and pathogens). If this is not practicable, the potential impacts of release of bathing water / in situ cleaning should be evaluated. ○ Black and grey water from on-site barges and other installations • Recognised localised and system-wide effects of waste streams on water quality, the benthic environment and other fauna must be considered.
ECONOMIC	
Values	Considerations
Decommissioning and Rehabilitation	<ul style="list-style-type: none"> • Describe plans for decommissioning of the lease and rehabilitation of the environment, including costs and timeframes for removal of infrastructure, destination for removed infrastructure (e.g. disposal, reuse), and proposed methods, costs and timeframes to remediate for seabed.

Table I – Detailed requirements for specific values

Cumulative Effects

The cumulative effects (at least additive and synergistic types) of the proposal in the context of existing and approved developments in the region should be considered as part of the risk assessment. Cumulative effects should be examined in terms of their ecological (environmental), social and economic dimensions.

Other proposals which have been formally proposed, and for which there is sufficient information available to the proponent to allow a meaningful assessment of their effects, should also be considered in any assessment of cumulative effects. Uncertainties about potential impacts in such cases should be identified. Interactions between biophysical, socio-economic and cultural impacts of the proposal should be discussed.

Risk Assessment Worksheet (Attachment 3) - Part I – Preliminary Risk

Source or event

Identify specific emission sources or events associated with each environmental objective that may give rise to impacts. For example, for 'environmental' the event of fish feeding emits nutrients, while the fish are a source of nutrient emissions (from faeces).

For each source or event the proponent should consider and categorise the spatial extent (and therefore the risk level) of potential impacts, as near, intermediate or far field. Consider events that are planned (i.e. part of normal operations) and unplanned (such as failure of infrastructure).

Stressors

Identify the potential stressor/s associated with each emission source or event. For example, a stressor related to fish feeding is the feed that is not consumed. A list of common stressors to marine values is provided at Attachment 4. While the assessment should use these common stressors to the greatest practicable extent, the proponent is also encouraged to identify/list other stressors based on published literature, as well as industry knowledge and experience.

Factors

Describe the relevant factors associated with the emission source or event, including:

- The scale, frequency and duration of the event
- The reversible or irreversible nature of potential impacts, and their likely duration (short term one year or less; medium term one to five years and long term more than five years)

Value/s

With reference to the list of values provided in Attachment 1 and section 4 of this guideline, identify those that may be affected (either positively or negatively) by the nominated stressor/s.

Risk Event

Determine whether the proposal will give rise to a 'risk event'. A risk event only needs to be considered if two conditions are true:

- The value is *sensitive* to the stressor
 - Is the value sensitive to the stressor creating the impact, or in other words, is it likely to change in response to the stressor?
- The value may be *exposed* to the stressor
 - Is the value likely to be exposed to the stressor?

Use the matrix provided at Attachment 5 to determine whether a risk event needs to be considered in the assessment. Where a risk event is not expected to occur for a particular stressor, then no further investigation is necessary. Justification for any omissions must be provided.

Potential Impacts

With due consideration of the published literature concerning known ecological impacts of aquaculture⁹, for each event and stressor outline the potential positive and negative impacts to relevant values in the absence of measures to avoid, mitigate and manage risks. The consideration of potential impacts should identify their source/s or events, all plausible consequences, the vulnerability of the affected environment to the potential impacts, spatial scale and the reversibility of the impacts. The proponent should attempt to quantify wherever possible and discuss the implications of the quantification.

As previously noted, potential cumulative effects also need to be addressed. Interactions between biophysical, socio-economic and cultural impacts should be identified. In addition to populating the risk management worksheet/table, it is recommended that the proponent also represent the above information using maps, diagrams, site plans and photographs as appropriate.

Consequence

Assign an appropriate consequence level (1-4) by:

- Considering all plausible 'lines of evidence' relating to the objective (and its associated values) that may be affected (positively or negatively) and, for each line of evidence, the degree of consistency (or inconsistency) with the level of impact described in each of the four consequence level scenarios (Attachments 6 and 7)
- Referring to the descriptions in the consequence table at Attachments 6 and 7

Where necessary, also account for the existing management regime (such as whether there are any restrictions on leases, farm size, proximity, stocking rates, allowable output levels and so on), noted under 'Factors', when assigning the appropriate consequence levels.

⁹ For example, Aquaculture Unit, 2013, [Literature review of ecological effects of aquaculture](#), New Zealand Ministry for Primary Industries, Port Nelson, New Zealand, although in drawing on such literature, it is important to distinguish between impacts observed in other countries (such as New Zealand) and observed or expected impacts in Tasmania. For example, the cited document states that interactions between marine mammals and aquaculture in New Zealand are relatively minor. However, this is not the case in Tasmania where there is regular interaction between marine mammals and aquaculture.

Likelihood

Assign an appropriate likelihood level (1-4) by referring to the descriptions in the likelihood table at Attachment 6. Where necessary, account for the existing management regime (such as whether there are any restrictions on leases, farm size, proximity, stocking rates, allowable output levels and so on), noted under 'Factors', when assigning the appropriate likelihood levels.

Preliminary Risk Level

Determine the preliminary risk level by referring to the consequence x likelihood risk matrix provided at Attachment 6.

Risk Assessment Worksheet (Attachment 3) – Part 2 – Residual (Mitigated) Risk

Avoidance and Mitigation Measures

The proponent may wish for the description of avoidance and mitigation measures to be sufficiently detailed to satisfy the EPA's assessment of a (future) application for the grant or variation of an environmental licence. The proponent should engage with the EPA throughout the development of the proposal and EIS to identify specific indicative measures that may be applied, and these should form part of the EIS.

For Part 2 of the worksheet, depending on the preliminary risk rating/level, consider whether additional measures designed to avoid or mitigate potential adverse impacts are necessary. These may be drawn from industry experience and standards, or requirements specified in legislation, codes of practice, or determined by agreement with the assessing agencies (e.g. EPA and NRE Tas). Where relevant, the proponent should refer to industry best practice standards, proposed farm management practices and the published literature.

Where there are alternative (and/or additional) avoidance or mitigation measures to reduce the risk of an adverse environmental impact, the alternatives should be reviewed, and the preferred option justified. Where adverse environmental impacts are unavoidable, the proposed measures to reduce the degree (scale and magnitude) of impact should be described in detail. The extent to which the measures will address the anticipated impacts should be specified.

Consideration should be given to measures that may be required in response to unplanned events, such as equipment failure or malfunction, disease outbreaks and other likely/possible/realistic types of disruptions.

It is critical the proponent demonstrates an organisational capability to manage and implement proposed avoidance and mitigation measures.

Mitigated Rating - Consequence & Likelihood

Considering any additional (or alternative) proposed avoidance and mitigation measures, re-evaluate the consequence and likelihood for the proposed activity/hazard to ascertain the residual risk levels.

Residual Risk Level

Determine and state the anticipated residual risk level for each marine value after proposed avoidance and mitigation measures have been implemented. Using the residual risk levels/scores, refer to Appendix 8 to ascertain the possible management responses and reporting obligations associated with the residual risk levels.

7.1 Overall Impacts on the Natural and Human Environment

In this section, for each aspect (source or event) considered in the worksheets (Attachment 3):

- Highlight the key potential impacts of the proposal, and list existing and proposed measures to mitigate and manage these impacts. For example, for the event *fish feeding* the potential impacts include *harmful algal blooms* and *increased turbidity*. The associated mitigation and management measures may include *match feed rate to consumption rate* and *monitor dissolved oxygen and seabed characteristics*.

Note: this information can be drawn from the PS. This information may be tabulated.

- Summarise the outcomes of the risk assessment process (see tables below). Proponent to populate each table with own results, for each relevant value considered
- Provide concluding statements concerning the significance of the potential impact of the development on each relevant value
- With reference to Appendix 8, outline the nature of any ongoing monitoring and reporting necessary to support compliance or determine the effectiveness of risk mitigation measures

As stated, not all values listed in Attachment 1 may be relevant to the proposed amendment. As indicated at Section 4 (Values), where the proponent considers a value is not relevant, or is unlikely to be influenced by the proposal, it may exclude the value from the risk assessment. The reasons for this should be fully documented. It is recommended the proponent include this information in the EIS as an appendix.

7.1.1 Environment – Applicable values and residual risk levels

Applicable values and residual risk levels			
Clean water (marine and freshwater) (lack of pollutants, lack of marine debris in water) Increased infrastructure and farming equipment has the potential to result in a proportional increase marine debris in the water. Management plan or response: regular clean-ups and data logging; refer to monitoring and reporting section for further information	Next value	Next value	

For the above and following tables, display (e.g. by colour-coding or shading) for each value its calculated residual risk level.

7.1.2 Economic – Applicable values and residual risk levels

Applicable values and residual risk levels			
Tourism Increased infrastructure, farming equipment and farming intensity have the potential to detract from local on-water tourism experiences. Management plan or response: engage with local tourism operators throughout planning process to provide relevant proposal information and respond to questions; refer to monitoring and reporting section for further information	Next value	Next value	

7.1.3 Social structures and amenity – Applicable values and residual risk levels

[insert table]

7.1.4 Recreation – Applicable values and residual risk levels

[insert table]

7.1.5 Cultural and Natural Heritage – Applicable values and residual risk levels

[insert table]

7.1.6 Climate change – Applicable values and residual risk levels

[insert table]

7.1.7 Waste streams – Applicable values and residual risk levels

[insert table]

8 Conclusion

Briefly discuss the key components and issues (negative and positive) of the proposal. Draw together the potential positive and negative impacts of the proposal to provide for the consideration of the residual impacts and overall results/outcomes of the proposal.

Provide statements to demonstrate how the proposal has addressed sections 21, 22 and 32(2) of the MFPA (refer to PS).

This information may also be summarised in a table.

9 References (EIS)

Provide a comprehensive reference list of all documents, other forms of media and authorities consulted when compiling this EIS.

10 Attachments/Appendices

Append copies of all documents, such as technical reports, management plans, policies and procedures and the like, that have been referenced within the main body of the EIS.

11 References (Guideline)

ANZECC 2000, volume 1, *Australian and New Zealand Guidelines for fresh and marine water quality*, ANZECC

Aquaculture Unit, 2013, [Literature review of ecological effects of aquaculture](#), New Zealand Ministry for Primary Industries, Port Nelson, New Zealand

Fletcher, R 2014 *Review and refinement of an existing qualitative risk assessment method for application within an ecosystem-based management framework* ICES J. Marine Science 14 pp

Great Barrier Reef Marine Park Authority, *Risk Assessment – Permission System*, Document No. 100429 Revision 1, 2017, GBRMPA

Ogier, E. and Macleod, C.K. 2013, *Your Marine Values – Public Report 2013*, IMAS Technical Report 120pp, UTAS

Picard, K et al 2018, *Australian Multibeam Guidelines*, Record 2018/19, Geoscience Australia, Canberra

ATTACHMENT I – REFERENCE TABLE OF VALUES

<p>Environment</p> <p>Recreational and commercial wild marine species (habitat, food availability and health)</p> <p>Connected marine and estuarine waters</p> <p>Clean water (marine and freshwater)</p> <p>Biological diversity</p> <p>Benthic habitat (sediments and fauna, including threatened species)</p> <p>Handfish</p> <p>Macroalgae, Seagrasses and other macrophytes</p> <p>Seabirds</p> <p>Shorebirds</p> <p>Marine mammals (e.g. seals, whales, dolphins)</p> <p>Acceptable biosecurity risk to salmon farmers</p> <p>Fish health</p> <p>Biosecurity and disease control</p> <p>Management of greenhouse gases and ozone depleting substances</p> <p>Healthy ecosystem function (habitats and communities)</p> <p>Threatened species recovery</p> <p>Plankton and microbes</p>
<p>Geological and geomorphological features</p>
<p>Economic</p> <p>Benefits/returns to the State</p> <p>Employment</p> <p>Tourism</p> <p>Access to foreshore (e.g. for marine industries, tourism operators, other businesses)</p> <p>Industry sustainability</p> <p>Commercial and recreational fishing (access and health of wild stocks)</p> <p>Existing marine farming</p> <p>Decommissioning and rehabilitation</p> <p>Fish escapes</p>
<p>Social structures and amenity</p> <p>Lifestyle quality/amenity</p> <p>Visual amenity (e.g. seascapes, coastal landscapes)</p> <p>Social cohesiveness</p> <p>Land resources (inc. reservations)</p> <p>Public health and safety (primary contact and seafood safety)</p> <p>Personal connection (marine environment for its own sake)</p>
<p>Marine research and education</p>
<p>Recreation</p> <p>Navigation safety/amenity</p> <p>Access for water-based recreational activities (e.g. fishing, boating, sailing)</p>
<p>Cultural and natural heritage</p> <p>Cultural practices/lifestyle (e.g. agriculture, fishing)</p> <p>Indigenous structures, technology and artefacts</p> <p>Places of historic significance</p> <p>World and natural heritage values</p>

Other heritage values (social, scientific and aesthetic)
Climate change
Resilience (e.g. to storm events, changing ecology, changing environmental characteristics)
Waste streams
Effective management of solid and liquid waste

ATTACHMENT 2 – ZONE ASSESSMENT SURVEY REPORT

ATTACHMENT 3 – RISK ASSESSMENT WORKSHEETS

Risk assessment worksheet – Part I – Preliminary risk – Environment

Environment – Risk assessment worksheet										
Source or event	Stressor/s	Factors	Value/s	Risk event?		Potential impacts	Existing mitigation measures ¹⁰	Consequence	Likelihood	Preliminary risk level/score
				Sensitivity	Exposure					
Fish feeding	Changes in nutrients (excess feed)	Feed rate (kg/day or t/month) Delivery method/s Feed type & composition	Clean water			Harmful algal blooms Increase in turbidity	Match feed rate to consumption rate Monitor dissolved oxygen, seabed			

¹⁰ Identify their nature, i.e. state whether they are MFDP management controls, marine farming lease condition/s, marine farming licence condition/s, environmental licence condition/s and so on.

Environment – Risk assessment worksheet

Source or event	Stressor/s	Factors	Value/s	Risk event?		Potential impacts	Existing mitigation measures ¹⁰	Consequence	Likelihood	Preliminary risk level/score
				Sensitivity	Exposure					
Fish	Changes in nutrients (faeces)	Stocking density Feed rate (kg/day or t/month) Year class Stage of growth Condition				Decrease in dissolved oxygen				

Risk assessment worksheet – Part 2 – Residual (mitigated) risk – Environment

Avoidance & mitigation measures	Mitigated rating		Residual (mitigated) risk level
	Consequence	Likelihood	
Reduce stocking densities and feed input rates if limits exceeded Fallow leases, destock and/or move stock as necessary			

ATTACHMENT 4 – COMMON STRESSORS ASSOCIATED WITH FINFISH FARMING¹¹

Stressor		Stressor	
Artificial light and/or natural light	Artificial lighting from above and below surface sources including vessels, moored marine farming infrastructure (e.g. platforms, barges, cages, navigational aids). Change in the amount of natural light available, such as through shading or water clarity.	Sedimentation	Change in the inflow, dispersion, resuspension or consolidation of sediments. Causes may include anchoring of marine vessels, construction activities, changes to moorings, movement of sea cages.
Existing or future human use arrangements	Limiting as well as opening up choices for existing or future use. Disturbing or excluding other users. Changes to aesthetics or ambience of an area.	Wind patterns	Changes in the strength, direction or frequency of winds. Implications for local sea temperature and inshore ocean turbidity (e.g. resuspension of sediments). Changes likely at local level (e.g. installation of infrastructure or equipment that alters wind movement).
Hydrodynamics	Altered waves or water currents (local scale), e.g.	Contamination of air	Releases of gases/particulates into the atmosphere, other than greenhouse gases.

¹¹ Adapted from *Risk Assessment – Permission System* (Document No. 100429), Revision 1, 2017, Great Barrier Reef Marine Park Authority

Stressor		Stressor	
	increased vessel traffic or speeds, cage impacts.		
Ecological processes	Functions including microbial processes, particle feeding, primary production, herbivory, predation, symbiosis, recruitment and competition. Changes in these processes can cause direct and indirect effects on other species, such as depletion of prey or predators.	Contamination of water or sediment	Point source discharges (including leaks and spills) to the area or diffuse land-based run-off, such as hydrocarbons, therapeutants, net wash solids. Suspended solids, shading, smothering and abrasion.
Noise and/or vibration	Noise from marine farming operations, below and above water (and from land-bases), associated with operational marine vessel movements, engine operation, feed barge operation and automated fish feeding systems.	Direct damage, removal or destruction of non-living things, including vessel strike	Intentional or unintentional, including anchors or moorings dragging, vessel groundings.
Nutrients	Increases or decreases in substances that support plant growth (e.g. phosphorus, nitrogen).	Direct death or removal of living things, including vessel strike	Intentional or unintentional, such as direct killing of plants or animals or removing them from the area.
Salinity	Increases or decreases in the volume of freshwater flowing into saltwater areas.	Oxygen	Increases or decreases in the dissolved oxygen content that determines growth rate & population of species.

Stressor		Stressor	
Temperature	Increases or decreases in the temperature of seawater.	Direct injury or disturbance of living things, including translocation	Intentional or unintentional, direct non-lethal injury or disturbance to wildlife, including entanglement, collisions and ingestion (e.g. plastics).
Introduction and/or spread of non-endemic marine species and/or disease	Introduction or increase in non-endemic species and/or disease, associated with marine vessel movement, movement of equipment and materials and translocation and security of farm stock.	Marine debris	Marine farming infrastructure and equipment discarded, disposed, abandoned or lost.

Notes

For stressors with known, measurable levels or ranges, including but not limited to temperature, salinity, nutrients and oxygen, the proponent should state and qualify these levels or ranges in its risk assessment process. Stressor levels or ranges should be considered in the context of their operational, environmental, economic, social, and recreational effects.

ATTACHMENT 5 – RISK EVENT MATRIX

Does a risk event need to be considered in the assessment?

	Sensitivity			
Exposure	Uncertain	Low	Medium	High
Low	Case by case decision	No	No	Yes
Medium		No	Yes	Yes
High		Yes	Yes	Yes
Uncertain		Case by case decision		

Sensitivity

Low – stressor is not known to affect the value

Medium – stressor is known to slightly affect the value (sub-lethal effects)

High – Stressor has well-documented negative impacts on the value (lethal effects possible)

Uncertain – there is a high degree of scientific uncertainty, or lack of knowledge about the value’s sensitivity to the stressor/s

Exposure

Low – the value is not known to occur in the area of impact, or has been reported as rare/unusual.

Medium – the value has occasionally been reported in the area of impact, or may be expected to occur in the area of impact.

High – the value is commonly reported or known to occur in the area of impact.

Uncertain – there is a high degree of scientific uncertainty, or lack of knowledge about the value’s occurrence or distribution.

ATTACHMENT 6 – GENERIC DESCRIPTIONS OF LIKELIHOOD AND CONSEQUENCE¹²

Level	Likelihood descriptor
Likely (4)	A particular consequence level is expected to occur in the time frame (indicative probability of 40-100%)
Possible (3)	Evidence to suggest this consequence level may occur in some circumstances within the time frame (indicative probability of 10-39%)
Unlikely (2)	The consequence is not expected to occur in the time frame but some evidence that it may occur under special circumstances (indicative probability of 3-9%)
Remote (1)	The consequence not heard of in these circumstances, but still plausible within timeframe (indicative probability of 1-2%)

Level	Consequence descriptor (also refer to Attachment 7)
Minor (1)	Measurable but minimal “impacts” that are highly acceptable and easily meet objective
Moderate (2)	Maximum acceptable level of “impact” that would still meet objective
Major (3)	Above acceptable level of impact. Broad and/ or long term negative effects on objective which may no longer be met. Restoration can be achieved within a short to moderate period
Extreme (4)	Well above acceptable level of impact. Very serious effects on objective which is clearly not being met. Long restoration period may be needed, or may not be possible

Consequence x likelihood risk matrix. The generic descriptions of each of the consequence and likelihood levels are presented in the above tables. The numbers in the cells indicate the risk score values and the shades represent levels of risk as described in Attachment 8 (possible management responses and reporting obligations for calculated risk levels)

Consequence level		Likelihood level			
		Remote	Unlikely	Possible	Likely
		1	2	3	4
Minor	1	1	2	3	4
Moderate	2	2	4	6	8
Major	3	3	6	9	12
Extreme	4	4	8	12	16

¹² Fletcher, R 2014 *Review and refinement of an existing qualitative risk assessment method for application within an ecosystem-based management framework* ICES J. Marine Science 14 pp

ATTACHMENT 7 – QUALITATIVE LEVELS OF CONSEQUENCE FOR OBJECTIVES RELEVANT TO ECOSYSTEM APPROACH¹³

Objective	Minor (1)	Moderate (2)	Major (3)	Severe (4)
Environment	Measurable impacts very localised. Area directly affected well below maximum accepted levels.	Maximum acceptable level of impact with no long term impacts on region-wide environmental dynamics	Above acceptable level of loss/impact. Region-wide dynamics or related systems may begin to be affected	Level of environmental impact clearly causing region-wide effects on dynamics & related systems
Economic	Detectable but no real impact on the economic pathways for the industry or community	Some level of reduction for a major aquaculture sector or a large reduction in a small aquaculture sector that the community is not dependent on.	Major sector decline & economic generation with clear flow on effects to the community	Permanent & widespread collapse of economic activity for industry & community
Social structures & amenity	Measurable impacts but minimal concerns	Clear impacts but no local communities threatened or social dislocations. Ongoing restrictions or decrease in expectations	Major impacts on/to social structures, at least at a local level, and long term suspension or restriction of expectations in some key activities	Complete alteration to social structures within a region, and/or permanent loss of all key expectations for recreational activities
Recreation	Temporary or minor additional stakeholder restrictions or loss of expectations	Ongoing restrictions or decrease in expectations	Long term suspension or restriction of expectations in some key activities	Permanent loss of all key expectations for recreational activities

¹³ Modified from Fletcher, R 2014 *Review and refinement of an existing qualitative risk assessment method for application within an ecosystem-based management framework* ICES J. Marine Science 14 pp

Cultural & natural heritage	Minimal or insignificant impact or loss of value to the heritage asset, and minimal concerns	Clear impact or loss of value to the heritage asset at a maximum level accepted by the public	Significant damage or loss of value to the heritage asset	All or most of the heritage asset value is likely to be lost
Climate change	Isolated difficulties would arise within daily operations but could be resolved	Components of the operation would require more than normal levels of management attention to protect the operation of the business	Operations would be greatly affected and require significant action	Severe operational dysfunction, making it difficult to sustain operations
Waste streams	Measurable impacts but minor changes to environmental condition, and no measurable change to environmental function or impact on human health	Impact at the maximum level that is accepted by the public	Above acceptable level of impact. Region changes may begin to be measurable.	Severe level of impact. Widespread changes to environmental condition, impacts on environmental function or human health.

ATTACHMENT 8 – LEVELS OF RESIDUAL RISK AND POSSIBLE MANAGEMENT RESPONSES

Residual risk level	Risk scores (C x L)	Likely management response	Likely reporting requirements
Negligible (0)	0-2	Acceptable, no management actions or regular monitoring	Brief justification
Low (1)	3-4	Acceptable, no direct management actions & monitoring at specified intervals	Full justification & periodic reports
Moderate (2)	6-8	Acceptable with specific, direct management & regular monitoring	Full, regular performance report
High (3)	9-16	Not acceptable unless additional management actions are implemented. This may involve a recovery strategy with increased monitoring or even complete cessation of the activity	Frequent & detailed performance reporting

ATTACHMENT 9 – MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE – ADVICE NOTE

In addition to State Government requirements, the Commonwealth Government may also have a role in the proposal's environmental impact assessment and approval process. Commonwealth approval is required for an action (e.g. a marine farming proposal) that has, will have, or is likely to have a significant impact on a matter of national environmental significance (MNES) or on Commonwealth land.

With reference to Commonwealth Government publications [Matters of National Environmental Significance – Significant impact guidelines 1.1](#)¹⁴ and [EPBC Act Policy Statement 2.2 \(Industry\) – Offshore Aquaculture \(August 2006\)](#), the proponent should determine whether or not its proposal will require referral to the Commonwealth DCCEEW for a discussion regarding assessment under the EPBCA.

Following this 'self-assessment' process, the proponent should state in Section 6.8 of its EIS whether it has, or intends to, refer the proposal to the Commonwealth DCCEEW for a decision by the Minister. Figure 1 of [Matters of National Environmental Significance – Significant impact guidelines 1.1](#) outlines the referral process, including outcomes, for cases where proponent determines that its proposal is likely to have a significant impact on MNES.

¹⁴ This publication provides definitions for, among others, *MNES*, *action* and *significant impact*.



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