

**Guidelines for the Preparation of a development proposal  
and environmental management plan for a proposed  
marine land aquaculture.**

Environment, Planning and Scientific Services Division  
Department of Primary Industries, Water and Environment  
GPO Box 44A Hobart Tasmania 7001

## **GENERAL INFORMATION FOR THE PROPONENT**

These guidelines provide a summary of the general information requirements for a Development Proposal and Environmental Management Plan (DP&EMP) for a land based sea water fish farm. These guidelines are intended to assist the applicant to ensure that the proposal meets necessary standards and demonstrate this to decision making authorities and, where necessary, to the public.

*The purpose of the DP&EMP is*

- *to provide a source of information from which interested individuals and groups may gain an understanding of the proposal and proposed environmental management measures*
- *to provide a basis to assess the potential effects of the proposal*
- *to provide a basis for any necessary conditions for approval*

*The DP&EMP should be tailored to the specific proposal and should focus on the most relevant issues.*

*While every attempt has been made to ensure that these guidelines address all the major issues associated with a land based aquaculture proposal, they are not necessarily exhaustive. The guidelines should not be interpreted as excluding from consideration other matters deemed to be significant or other issues that emerge as significant from environmental studies or otherwise during the course of preparation of the DP&EMP.*

*The main text should be written in a clear and concise style that is easily understood by the general reader. Technical terminology should be avoided as far as possible. The detailed technical data and supplementary reports necessary to support the main text should be included in appendices. All sources of information should be referenced.*

*At the time of writing the guidelines, Aquaculture is not automatically a Level 2 activity as defined within the Environmental Management and Pollution Control Act. In these circumstances, an application to Council for a permit under the planning scheme will not automatically be referred by Council to the Board of Environmental Management and Pollution Control (Board) for more detailed environmental assessment. Never the less these guidelines should be referred to in the preparation of the DP&EMP.*

*Close consultation with the Planning Authority (usually the local Council) should be maintained during the preparation of the DP&EMP. Council may wish additional issues to be addressed in the DP&EMP to meet local concerns, or to avoid the applicant preparing a second document regarding other planning issues. When Council advises that the document contains enough information for them to make an informed decision, it will advise how many copies it will require and any necessary measures for public display and consultation.*

*If the Board selects the application for assessment as a Level 2 activity, then close consultation should be maintained with the Environment, Planning and Scientific Services Division (EPASS) of the Department of Primary Industry, Water and Environment (DPIWE). When the Board advises that the document contains enough information for them to make an*

*informed decision, a minimum of ten copies of the document should be provided to the DPIWE. These will be distributed to relevant DPIWE officers, other relevant government agencies and also public display in libraries, Council and the DPIWE office reception areas.*

*Following the public consultation process, the DP&EMP may then require amendment as a result of consideration of public and government agency submissions. This generally takes the form of an addendum or supplement of the DPEMP.*

## **CONTENTS OF THE DEVELOPMENT PROPOSAL AND ENVIRONMENTAL MANAGEMENT PLAN**

### **i FOREWORD**

This section should briefly outline the assessments and approvals process, and explain the function of the Development Proposal and Environmental Management Plan (DP&EMP).

The statutory rights of any person to make representations relating to the application for a permit should be made clear. Information should be provided on how to make a representation and the rights of a person who makes a representation to make an appeal against the granting of a permit.

### **ii CONTENTS**

Provide a list of the contents of the report (including illustrations), with reference to the relevant page numbers.

### **iii EXECUTIVE SUMMARY**

This section should provide an executive summary of the DPEMP to give a clear and concise overview of the project and its environmental implications. It should contain headings which correspond to the main section headings and subheadings of the DPEMP.

## **1.0 INTRODUCTION**

This section should provide information on the following.

- Identify the proponent.
- Briefly describe the proposed development and use of the site (e.g. grow out facility of 600 tonnes of abalone per annum).

If the proposal is not to be constructed in one phase, outline the overall project and specify the phases to be constructed as part of this planning application. The time frame for phases is to be included.

If the DPEMP is being prepared as part of an application to extend or intensify an existing activity, then the DP&MP should be prepared for the whole activity, including the proposed changes.

Ensure that the proposal meets the requirements of the local planning scheme and any relevant legislation or local, state or national policies or strategies (for example, *State Policy On Water Quality Management 1997*). Identify other approvals (such as Crown land lease, etc.) required for the development to proceed (at Commonwealth, State and Local level), and give the status of each approval.

For further information regarding other required approvals it is recommended that the applicant visits the Aquaculture Business Approvals Package on <http://www.bap.tas.gov.au>. The Aquaculture Business Approvals Package contains information and forms relating to key licences and approvals for Freshwater and Marine Fish Farms, and the processing of fish from those farms.

## **2.0 THE EXISTING ENVIRONMENT**

This section should describe the project site and give an overview of the existing environment which may be affected by the construction and operation of the project. This should include the area associated with ancillary activities (such as hard standing, jetties and ramps) and the areas where water intakes, effluent and solid waste storage and disposal shall occur.

### **2.1 Location**

The following details must include a locality map (1:25,000) showing the following:

- ◆ Topography, watercourses, lakes, wetlands, floodplains, coastline and other relevant major physical features.
- ◆ Terrestrial and marine access routes for transporting materials, wastes etc.
- ◆ Boundaries of property owned or leased by the applicant, and boundaries of proposed development site.

### **2.2 Physical Characteristics and the Planning Context**

Provide the following information - include maps and photographs where this assists with the description of the proposal:

- Information on land tenure of the site, title details. Clearly identify any Crown or Council land (including sea bed) that is to be used.
- Information on land zonings of the site and surrounding areas, compatibility of the proposal with any planning provisions or land use constraints, including relationship to any floodplain zoning (present and future) requirements.

- A copy of the relevant portion of 1:100000 scale Land Capability portion of 1:100 000 scale Land Capability Map (Tasmanian Land Capability Series),if available for the area, showing the land capability classes in the area.
- A description of land use and ownership in the vicinity and those areas which may be affected by the proposal (for example, by routine or accidental emissions). In particular, the location of individual residences, schools, caravan parks, camping areas, water treatment plant and similar sensitive uses within the potentially affected distance of the proposed activity (including any sites which are currently vacant, but for which construction plans have been lodged with the planning authority). Include sites and routes which are available to the public for access on the land or to coastal waters.
- A description of uses of any inland, coastal or estuarine waters or wetland (river, lake, lagoon etc.) in the vicinity which may be affected by the proposal (for example, by use and/or routine or accidental emissions). (Include if available determined protected environmental values (PEV's) for the matters affected by this proposal.
- A description of the local meteorology which may affect the site or its use (for example causing flooding, storm damage, erosion, dispersion of emissions, disturbance of particulates, treatment of wastes etc.).
- A description of physical characteristics including geology, geomorphology, soils, and surface drainage. This should identify if relevant, high water mark, low water mark, navigational channels, beach composition, rock platforms, mobile land features such as sand dunes.
- Identify geomorphological or other features which may be affected by natural hazards and processes (such as major meteorological events, land slip, coastal erosion and deposition) or may affect the site and its use.
- A description of sites or areas of commercial (eg. shell fish beds), ecological (e.g sea grass beds), geoconservational, cultural or heritage (including Aboriginal heritage) value which may be affected by the proposed activity. Any particularly sensitive sites or areas and those likely to be affected by possible impacts of the proposal should be specifically noted.
- A description of the present condition and use of the site (including present infrastructure), including areas to be used for water intakes and effluent disposal.
- An outline of previous uses of the site and the subsequent potential for existing site contamination which may affect human or environmental safety.
- A description of the terrestrial and aquatic flora (species and community structure) and fauna (habitats and species). This should include the site, vicinity and areas which may be affected by routine and accidental releases of pollutants during construction and operation. Any rare, threatened or endangered species or communities likely to be affected should be specifically noted.

- A detailed baseline survey of aquatic flora and fauna (including benthic organisms) should be prepared for the vicinity of the effluent outlet potentially likely to be affected by the emissions.
- If constructing new marine infrastructure, identify other locations within 10 km which provide similar marine infrastructure. This should include proposed ramps, jetties, wharves and similar structures. Explain why new infrastructure at this site is necessary if any alternatives are available.

### **3.0 DEVELOPMENT DESCRIPTION**

In this section, describe the proposed activity (i.e. the proposed development and use of the site), including

- ◆ Describe in detail the proposed development and use of the site.

#### **Site Plan**

Include a site plan (or plans) (1:200) of the layout of the fish farm site (land and water) showing the location of all proposed major items of equipment and facilities showing (but not being limited to):

- water intakes
- fish tanks/pond/cages/raceways, including size and nature of fish tanks or ponds
- any processing and packaging facilities
- domestic sewage and grey water treatment and disposal
- operational effluent storage and treatment, outlet pipes.
- storage areas including unloading areas for materials, providing the size and nature of storage vessels.
- storage areas specifically used for the storage of any hazardous materials and wastes, with size and nature of storage vessels.
- the location to be used for the on site storage and/or disposal of any other solid or liquid wastes (e.g. dead fish, shell waste, sludge,).
- the areas of hard surfacing and internal roads.
- the system for collecting surface storm water, treating to remove any pollutants and the routing of any outlet pipes.
- location and type of storage or disposal for roof water.
- monitoring sites for any emissions which may cause environmental harm.
- areas for earth works.

### **Construction Phase**

Include in this section (where relevant):

An outline of any proposed site preparation works including excavation or fill works, removal of vegetation, alterations to the coastal shore and sea bed (e.g. dredging, shore preparation, etc.), alteration to mobile coastal features such as dunes and spits

A description of the sequence and final extent of any phased operations; and any expected further expansion of the activity.

A description of the system for collecting and treating stormwater contaminated by construction activities

Identification of sources (including point sources) of atmospheric (e.g. odour, dust) emissions during construction.

Location of any major noise sources during construction and proposed hours of construction activities by week day and weekends/public holidays.

A proposed timetable for construction of the project.

### **Operational Phase**

Include in this section (where relevant):

- An outline of the stages of the operating process, including projected amounts of materials and wastes (both solid and liquid) at each stage and treatment facilities at the aquaculture production and processing stage.
- Detail of any on-site fish processing, including the amount of product to be processed per year. Under schedule 2 of the *Environmental Management and Pollution Control Act 1994* fish processing includes “the conduct of works for scaling, gilling, gutting, filleting, freezing, chilling, packing or otherwise processing fish for sale and in which 100 tonnes or more of product per year are produced”. If the proposed levels of processing are 100 tonnes or more then the project would be defined as a level 2 activity and would need to be assessed by the Board of Environmental Management.
- Describe the nature and quantities of any materials to be used at the site, including the input amounts and types of raw materials (such as feed, routine chemicals etc.) at average and also maximum periods of production.
- Describe the routes, type and number of truck or vessel movements per day required to deliver raw materials, products and remove waste (the projected times of transport movements should be given at average and also maximum periods of production).
- Specify the nature and quantities of other materials (fuel etc.) consumed in the production/processing.

- Describe the estimated quantities, method of collection, storage, treatment (mechanical and biological), and reuse, recycle or disposal for each solid and liquid waste stream. This should include:
  - Domestic wastes
  - Process wastes
  - Contaminated surface stormwater
  - Surplus disinfectants and medicines
  - Any licensed waste transport contractor, route and disposal location
- Describe the estimated quantity and physical composition, before treatment, of liquid wastes. Estimates of the levels of pollutant including concentrations and mass loadings in liquid wastes. This should include such parameters as temperature, chemicals, total suspended solids, pH and biochemical oxygen demand (BOD), ammonia, phosphorus, nitrates/nitrites etc.
- Describe the sources (including point sources) of atmospheric (e.g. odour, dust) emissions.
- Describe the location of any major noise sources (eg. pump stations, refrigeration equipment).
- Specify the maximum increment in the ambient noise levels likely to be experienced at the boundary of the site including items within crown lease areas (such as pump stations) and at sensitive uses in the vicinity (including variations during day time, night time, weekends and public holidays).
- Specify the projected hours of operation for the plant (hours per day/specific days per week, public holidays etc.) and any seasonal variations.
- Identify any external lights which may cause nuisance to local residents or hazard to navigation
- Identify any parts of the facility which are likely to attract bird life which may threaten public health or air navigation.
- Identify the requirement for additional publicly provided infrastructure, facilities or services.

## **4.0 POTENTIAL ENVIRONMENTAL IMPACTS**

### **4.1 Identifying Impacts**

This section should first identify the potential environmental impacts (i.e. the environmental issues) resulting from the proposed activity, based on the preceding descriptions. This means identifying the nature of any changes resulting from the proposal that are likely to occur and the location of the impact, i.e. what could happen and where as a result of the project going ahead.

Include the physical, biological, and economic (including public health) impacts, both positive and negative. Consider impacts caused to the atmosphere, land and water.

This should include routine operations and emissions as well as foreseeable but unplanned events.

The potential impacts should be considered for the construction and operation of the proposal.

Some examples of potential environmental impacts include:

- water pollution;
- site contamination, (eg chemical spills, contaminated storm water runoff, salination of soils);
- threat to the sustainability of a resource (eg fish);
- public access limited/prevented;
- conflicts with other users (real or perceived);
- threat to public health and safety;
- threat to the stability of land forms and natural processes;
- loss of biodiversity;
- loss of important habitat;
- threat to an endangered or rare species;
- increase in noise levels;
- generation of unpleasant odours,
- degradation of aesthetic values of the area; and
- overloading existing infrastructure,

If a significant risk to public health is identified, the Director of Public Health may require that a health impact assessment will also be undertaken.

## **4.2 Evaluating Impacts**

This section should include an evaluation of the potential environmental impacts on the land and in the waters(i.e. what are the consequence of the identified impacts) and identify the significance of the impacts.

The Management Plan (Section 5) should focus on significant negative impacts. These should be clearly identified in Section 4 in order to facilitate the identification of the proposed management measures and contingency plans within the Management Plan.

The assessment should consider:

- the worst case consequences of the effects of an incident on the affected area, the emission pathways, and the likelihood that those consequences will occur.
- the vulnerability (ie. susceptibility, resilience, ability to recover) of the environment to the likely (or probable) impacts.
- how retrievable (reversible) the consequences are.
- any cumulative risks from this proposal and other existing activities.
- events likely to occur frequently, even if individually of minor consequence

- events which may have significant adverse consequences to people's health or safety, property or ecology
- events which may affect an area of international, national, state, regional, or municipal importance.
- events which may cause a nuisance to other people in the vicinity
- events which may threaten sustainable use of natural resources or other economic activities
- planning and environmental requirements specified in the planning scheme.

## 5.0 MANAGEMENT PLAN

In this section identify and describe in detail the measures proposed to avoid, mitigate (to an acceptable level) or remedy the significant potential negative environmental impacts identified in the previous section. This includes potential impacts caused by the construction and operation of the proposal.

Define, for each significant environmental impact identified, the proposed environmental performance standard to be achieved by the applicant. These may take the form of emission levels or requirements defined by legislation or the planning scheme, best practice environmental management, codes of practice, National standards, or similar sources. Where possible, the identified performance standard should be objective, measurable and capable of monitoring. Where possible, the relevant legislative or other source of the standard should be identified.

Describe the method of achieving the emission levels. This may be by the use of specific pollution control equipment, or management prescriptions. Unsupported assertion that the levels will be achieved will not be considered adequate.

Describe the methods to be adopted for routine emissions and also emergency procedures for unplanned (accidental) emissions. (EMS, ISO 14000)

Outline any proposed methods to reduce, re-use and recycle, and any plans for an internal "environmental management system".

Identify how the proposed methods conform to Best Practice Environmental Management.

The preparation of this section should consider the following issues:

### 5.1 Water

#### Water Quality

Describe the methods proposed to monitor any degradation of ambient water quality, including coastal waters, inland waters and groundwater. Describe the method to commence measures to prevent further pollution and remediate if pollution of ambient waters is identified which exceeds approved limits.

## Waste Water

Describe how the proposed method of treating each wastewater stream (including potentially contaminated stormwater) and its disposal will pose minimal impact on the environment and to public health. In doing so endorsement of direction of the *State Policy on Water Quality Management* should be discussed showing compliance with levels specified within Best Practice Environmental Management endorsed by the Council or DPIWE. The final quality and quantity of effluent per day to be disposed of should be discussed to show compliance with the *State Policy on Water Quality Management 1997 and the ANZECC Guidelines*

The relevant sections in the State Policy on Water Quality Management to be addressed are as follows;

- ◆ S. 6 Objectives of the Policy.
- ◆ S 16.2 Key principles for limiting emissions from point sources (this section includes the hierarchy of waste management).
- ◆ S 17.1 & 17.2 Use of accepted modern technology.
- ◆ S. 7 Protected environmental values.
- ◆ S. 10 Determining protected environmental values.

Describe any management strategies to reduce, re-use or recycle liquid wastes.

Describe the estimated quantity and physical composition of the effluent discharge after treatment (both point and diffuse source and both solid and liquid) from the operating system, including the temperature, level of chemicals, non-filterable residue, pH and BOD of the effluent water and nutrients (ammonia, phosphorus, nitrates/nitrites).

Describe how parameters such as water temperature, pH, turbidity and conductivity of the effluent will be reduced to ambient sea water temperatures prior to discharge.

Describe how wastewater treatment will remove chemicals and medicines used during the fish farming process, prior to discharge.

Describe how the saline water will be managed to prevent seepage of contaminant(including nutrients, salinity, pathogens) to the ground water (e.g. piping effluent below Low Water Mark, handling procedures, bunding on tanks, impermeable liners on lagoons).

Describe how the treatment process will avoid causing algal blooms at sea.

Demonstrate that there will be sufficient land available for irrigation of sewage waste (if required) without causing environmental harm.

Detail contingency plans for when control measures/equipment breakdowns or accidental releases to the environment occur, including proposed emergency and clean-up measures.

Describe how fish pathogens will be contained on site.

## **5.2 Solid Waste Management**

Detail management strategies to reduce, re-use, recycle and finally dispose of solid waste should be detailed. If materials are disposed on site, a description of the method of managing the site will be required. If waste is disposed off site the method of storage, transportation and the location of disposal should also be provided

## **5.3 Hazardous Materials (including hazardous wastes)**

The environmental management plan should identify the measures to be adopted to prevent or control any accidental releases and spills of hazardous materials including hazardous wastes (e.g. bunding arrangements) to protect the environment.

Identify any safety management requirements for the protection of human health and safety affecting the community outside the boundary of the premises (eg. large LPG containers, compressed coolant gases, water intake pipe)

Detail any necessary off site emergency evacuation plans due to storage and use of hazardous materials.

## **5.4 Atmospheric**

The extent of any atmospheric emissions (e.g. odour, dust) and the proposed control measures should be detailed.

## **5.5 Noise**

Specify any proposed noise control measures/equipment and/or management methods (for example, hours of operation) should be specified.

Detail contingency plans for when control measures/equipment breakdowns or accidental releases to the environment occur, including proposed emergency measures.

## **5.6 Visual Considerations**

Describe any measures to minimise the visual impact of the development from any significant vantage points (e.g. lookouts, residential areas, public roads, recreation reserves etc.)

Describe measures to avoid external lights causing nuisance or hazards to navigation.

## **5.7 Natural Hazards**

Identify the measures to be adopted to ensure that identified natural hazards (e.g. flood, bushfire, landslip, storm surge, coastal erosion) do not initiate accidental emissions from the activity.

Identify any proposed engineering or other works to provide protection from natural hazards.

Describe any proposed measures to sustain and reduce the impact of the proposal on the coastal processes, and mobile landforms.

## **5.8 Historical, Geological, Geomorphological, Cultural, or Ecological Values**

Describe the measures to be taken to protect areas or features of conservation value (geological, geomorphological, soil, flora, fauna, cultural and historic) on-site or off-site, including wetlands, water and access routes.

Detail the management strategies which will be implemented to prevent fish or fish eggs (spat) escaping.

## **5.9 Public Health and safety**

Outline measures to be taken to minimise any risk to public health or safety (eg. disease vectors from attracted birdlife, safety of public access along shore) resulting from this proposed activity.

## **5.10 Public access**

Describe the measures to ensure no loss of access by the public along the shore or to coastal or inland waters resulting from this proposed activity.

## **5.11 Monitoring**

The DP&EMP should commit to complying with a monitoring program and details of the proposed program should be provided. It is likely that such a program will include:

- flow data by way of automated sampling devices installed at approved sites which are readily accessible at all times to authorised officers.
- water quality (as per performance levels) data and within the ambient zone (i.e. receiving waters) and the end-of-pipe(s) (point effluent discharge).
- frequency and timing of data collection (intake, end-of-pipe and ambient) to coincide with and reflect high risk operations/conditions (i.e. immediately following, feeding periods and cleaning periods, etc.).

It can be expected that the frequency of monitoring will be high initially, and following review of data and comparison with performance criteria, should be progressively scaled down to a level agreed to by the Council/Department.

The DP&EMP should acknowledge that all samples are to be obtained, preserved and analysed in accordance with the relevant standards and procedures, and recording and reporting of data should be in an approved (standardised) format (to be advised).

All water quality samples shall be submitted to a NATA accredited laboratory or laboratory approved by the Director of Environmental Management for analysis.

### **5.12 Review**

It is likely that the operator will be required to review the management plan after the first year of operation. Reviews should include a comparison of the actual operation to what was predicted would happen. Subsequent reviews should be made as necessary after this time, usually at 3 yearly intervals but at no greater interval than 5 years. It will also be necessary to provide the proposed program and method of review.

### **5.13 Responsibilities**

The document should identify the responsibilities (by position) of staff to ensure that the different aspects of the management plan are implemented. This should include auditing of operational practices, maintenance of competence and knowledge of the management plan by personnel and contractors, emergency preparedness, incident investigation and all aspects of monitoring. Any arrangements for making use of outside expertise should be described.

## **6.0 SUMMARY OF COMMITMENTS**

This section should briefly summarise the management commitments and standards which have been made to ensure the activity performs as stated in the Management Plan section of the DP&EMP.

The summary should be written in such a way that this section of the DP&EMP can be referred to in the permit condition which specifies how the activity will be developed and carried out.

## **7.0 CONCLUSION**

This section should justify carrying out the proposal in the manner proposed, considering bio-physical, economic and social issues. Include a summary of how the principles of sustainable development and any State Policies have been taken into account.

## **8.0 APPENDICES**

The quality assurance and quality control procedures used in the preparation of the DP&EMP should be described. These will include a discussion of the qualification and experience of the study team, the use of specialist sub-consultants to address particular areas, and the use of peer review. Where areas identified in the guidelines have not been addressed by the DP&EMP, an explanation needs to be provided.