

# EPA Guidelines

## Environmental guidelines for completion of PIRSA aquaculture licence applications (land-based) EPA requirements—information for applicants

Issued May 2007

*684/07: This guideline explains to applicants the information required by the EPA to make an environmental assessment of their land-based aquaculture licence or licence amendment application which is processed by the Department of Primary Industries and Resources SA (PIRSA)\*. A similar guideline exists for marine aquaculture activities.*

### Introduction

In accordance with provisions of Section 59 of the *Aquaculture Act 2001*, all licence applications and amendments must be referred to the Environment Protection Authority (EPA) before the licence (or amendment) can be approved.

The EPA must, in determining its response to the application, have regard to and seek to further the objects of the *Environment Protection Act 1993* and have regard to the general environmental duty and any relevant environment protection policies under that Act.

The EPA is reliant on a range of information to support its decision-making process. This includes information and advice from PIRSA, the information contained within the application, and for licence amendments access to previous environmental monitoring data.

In assessing your application, the EPA must consider and further the objects of the Environment Protection Act. You will need to provide adequate information to remove any uncertainty regarding your ability to operate the aquaculture venture without resulting in environmental

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\* PIRSA Aquaculture manages the aquaculture licence assessment process. Consequently all licence applications or enquiries should be directed to PIRSA (telephone 8226 0314). Following their assessment, PIRSA will then forward the application to the EPA for consideration. It should be noted this document does not replace any requirements stipulated by PIRSA Aquaculture as part of their formal licence assessment process.



harm. If the EPA is required to seek additional information, the assessment process of your application may be delayed.

This guideline describes information the EPA requires to assess aquaculture licence applications (land-based). The EPA encourages applicants to provide detailed information about their proposed aquaculture activities. This will assist in avoiding extended delays or opposition to the aquaculture development.

## Potential environmental issues

Whilst the EPA is interested in all aspects of the farm operation, its principal concern lies with activities that may generate pollution based environmental issues. This section describes many of the issues that may be associated with aquaculture activities. The environmental issues of specific interest to the EPA include:

- water quality
- marine ecology
- waste management
- chemical spillage
- impacts on neighbours (eg noise and odour).

Applicants should ensure that all issues are thoroughly addressed in their application.

An applicant may have a very clear understanding of the type of activity being proposed. However, the EPA is unable to make simple assumptions of farm practices and can only make its assessment based on the information presented to it. Applicants are therefore encouraged to provide as much information as possible (including where appropriate either photographs or video) of the site/activity.

## Water Quality

### *Wastewater discharge*

The addition of nutrients to water in the form of uneaten feed and faeces from cultured animals or from cleaning equipment can result in environmental harm if the wastewater remains untreated and/or is discharged inappropriately. Under all circumstances, wastewater must be discharged appropriately so that contaminated water does not flow into catchment areas, nearby waters or permeate into underlying groundwater.

In some circumstances, such as coastal abalone ventures and marine hatcheries, wastewater needs to be discharged to the marine environment or other natural waterbodies. Proposed ventures of this kind must incorporate a waste management strategy or some form of treatment system (eg settlement pond, mechanical and/or biological filtration) into their farm design that identifies how they intend to remove nutrients and suspended solids from the wastewater prior to discharge. It is important to note that any discharged water must not compromise the water quality criteria for the receiving waters as specified in the *Environment Protection (Water Quality) Policy 2003*.

Applicants will be expected to be able to demonstrate a capacity to manage their wastewater both through containment, treatment and lawful disposal. Appropriate methods of discharge of wastewater include irrigation to crops, pastures or gardens (freshwater systems), or via settlement/evaporation ponds or other treatment systems. Applicants should indicate the potential volumes of wastewater that is to be discharged from their system and provide a detailed description on how they intend to manage, treat and discharge that wastewater.

### *Proximity to waterways and flooding*

The applicant must specify the proximity of any waterways (surface and groundwater) to their proposed aquaculture site, and any topographical features that might cause (or prevent) issues

associated with flooding or other interactions with natural waters. They should also include a detailed description of the waterway including whether it is permanent or intermittent. Applicants should be able to demonstrate how they intend avoiding the discharge of wastewater to nearby waterways.

The proposed site of the aquaculture venture should not be located in an area that is susceptible to flooding. This may lead to contamination of waterways, or escape of culture stock should a flood occur. If there is a risk of flood, bunding must be incorporated into the farm design to prevent floodwaters from reaching the culture site.

### *Culture/settlement/evaporation ponds*

Any ponds used in an aquaculture venture must be designed and constructed to prevent seepage into the groundwater or other nearby surface waters. Settlement/evaporation ponds should be able to cope with the volume of wastewater that needs to be discharged. Applicants should ensure full details of system design (including justification for dimensions/capacity) is included with the application.

### *Chemical use*

Applicants must be able to demonstrate their capability to properly manage, store and lawfully apply any chemicals that may be used in the operation of their farm. The addition of antibiotics or chemical water treatments to the water system may constitute an activity of environmental significance, which in addition to PIRSA requirements, may require an EPA authorisation and be subject to EPA licensing requirements.

### *Saline wastewater*

There has been recent interest in using saline groundwater to culture marine species inland. Saline wastewater discharged from these systems must be disposed of in a manner that does not impact on nearby waterways (both ground and surface waters) or cause contamination of land.

## **Waste management**

### *Stock mortalities and fish processing waste*

Mortalities of stock are inevitable in fish farms. Licensed operators should be prepared for managing both small- and large-scale mortality events, and consequently are expected to be able to clearly describe how they intend to manage their mortalities or processing waste.

The EPA's preferred method for the disposal of ad-hoc mortalities and fish processing waste is via composting. If the applicant intends to arrange composting, they should describe how the composting will occur on site giving consideration to minimising potential environmental issues such as odour, site contamination and vermin.

Providing consideration is given to potential environmental issues associated with odour, vermin, site and water contamination, and fish are buried in a manner to assist decomposition, the EPA may not oppose the burial of insignificant numbers of fish on site. However it should be noted that mass mortalities and large volumes of fish waste from fish processing must not be disposed of using this method unless authorisation has been obtained to do so.

If major fish mortalities occur, applicants are expected to be able to nominate where and how those fish will be disposed of. For example, if it is likely that fish will be disposed of via a licensed waste or composting facility, the applicant should nominate that site, and confirm that the site operators have been contacted and are licensed to take organic waste as well as how those fish will be transported to the site.

Regardless of disposal method, the EPA considers it essential for licensees to plan ahead for these types of events so that disposal is undertaken in an approved manner.

Applicants are also reminded that they must contact PIRSA when significant numbers of mortalities are experienced.

### ***Organic sludge and sedimentation***

Applicants will be expected to detail their proposed arrangements for the removal and lawful disposal of organic sludge. Organic sludge (other than from saline water facilities) can be used as a fertiliser or top dressing on vegetated surrounds but should only be applied at a rate that ensures full uptake of nutrients by the vegetation. It may also be used for compost. It is critically important that applicants should be able to demonstrate that their organic or other waste will not contaminate the licensed site, neighbouring properties or waterways (including groundwater), nor cause offensive odours or other nuisance (eg pest attraction) issues for neighbours.

### ***Other waste***

As with any form of land-based business venture, solid waste in the form of office materials, personal waste (eg food and drink containers, etc), disused equipment, feed bags, rope, etc should be removed and disposed of lawfully. Applicants should be able to describe their day-to-day waste management processes. The EPA encourages the concept of reduce, reuse and recycle of wastes.

### **Site contamination**

Site contamination can be caused by spillages and inappropriate storage and disposal of organic waste (eg sludge, fish waste, mortalities) and hazardous substances (eg fuel, oil and grease, cleaning chemicals). Organic waste produced on the farm should be stored and disposed of appropriately to avoid the potential for site contamination. Measures should be incorporated into the farm design and operation to avoid the potential contamination resulting from spillages of organic and inorganic waste that may occur.

The discharge of wastewater out to sea from marine hatcheries or abalone farms may result in the contamination of the sea floor at the point of discharge. This contamination may result from the build-up of organic matter resulting from the discharge of uneaten food and faeces in the wastewater. Any proposal for a pump-ashore aquaculture venture should include a suitable mechanism for the removal of organic solids from the wastewater prior to discharge.

### **Air quality**

Applicants should be able to demonstrate awareness of and identify appropriate response to prevent or manage potential odour issues. Odours can be generated on aquaculture sites through several causes, such as the inappropriate storage or disposal of organic waste such as mortalities, feed, pond sludge, biofouling, etc.

The applicant must identify the proximity of neighbours, and clearly state how odour issues will be managed.

### **Noise**

The applicant should be aware of potential noise issues that may affect the amenity of neighbouring properties. The main sources of noise from fish farms may include pumps, generators, bird-scarers, auto-feeders, aerators and temperature control devices. While many aquaculture sites are remote from residential areas, those that are located near other properties may cause impact through the operation of the facility. Consequently the applicant will be expected to demonstrate how they intend to prevent noise from impacting neighbouring properties.

### **Scouring/shading**

Beyond 'pollutant' type impacts, the EPA will be particularly interested in issues such as the ability to avoid potential impacts on seagrass and other aquatic vegetation through shading and scouring. With regard to coastal pump-ashore operations where intake and outlet pipes may

impact on aquatic vegetation, applicants should clearly describe management arrangements to minimise any potential impacts (eg length of pipes, securing method to sea floor, location/proximity of pipes in comparison to aquatic vegetation).

### Environmental monitoring results

All licensed sites are required to participate in environmental monitoring in accordance with PIRSA Aquaculture Regulations. If the application is an amendment to an existing licensed operation, the EPA should be provided with and will seek access to all recent and relevant monitoring data. The data will assist the EPA in determining whether an aquaculture activity is likely to contribute to environmental harm. Consequently the EPA encourages all licensees to actively participate in their environmental monitoring requirements. If this information is not provided, the EPA will be reluctant to endorse any licence amendments that may be requested. See *EPA Guidelines: PIRSA aquaculture lease conversions—requirements for applicants (2007)* <[www.epa.sa.gov.au/pdfs/.....](http://www.epa.sa.gov.au/pdfs/.....)>

### Environmental checklist

The following section provides a checklist that can be used by the applicant to assist with the provision of information with their PIRSA licence application. The applicant is reminded that this document does not replace **any** of the requirements imposed by PIRSA as part of their formal licence assessment process. If the information present in the application is inadequate, the EPA will be required to request further information, which could delay the application.

The information that is provided with the licence application should aim to:

- provide a clear and detailed explanation on the activity that is being proposed for the site
- identify all potential impacts that may be associated with both the construction and operation of the facility, especially issues associated with nutrient and sediment loading in discharges
- describe any action that will be taken to minimise the potential for environmental impacts
- identify whether any environmental impacts have occurred on or off the site, and what management arrangements have been implemented to address those impacts.

It should be noted that not all points on the checklist will be relevant to all sites and will depend on the type of aquaculture activity being proposed. Further, applicants should note that the EPA should be able to obtain this information from material provided by the applicant to PIRSA. Consequently the applicant is **NOT** expected to provide this information to the EPA in addition to the information they provide PIRSA.

### General information

- Provide a scale map of the site showing structures associated with the aquaculture development (sheds, tanks, ponds, etc), any nearby waterways, slope of the site, etc.
- Indicate the distance to the nearest neighbour. The map discussed above should display proximity to neighbouring properties.
- Include photographs of the proposed site, with particular reference to ecologically sensitive areas (eg waterways, native vegetation etc).
- Describe in detail the type of culture system to be used including what individual components will be included in the system, particularly systems treating wastewater prior to discharge. Photographs and illustrations are particularly useful for describing system design.

- Identify the proposed feeding rates, type of feed used and expected production tonnages.
- Indicate whether any fish processing will be undertaken on site, and if so describe how waste will be managed.

### Water quality

- Indicate the total water capacity of the system and where will water be sourced.
- Identify the proximity of the proposed development to nearby waterways (both surface and groundwater), and provide a description of those waterways.
- Indicate the depth to groundwater.
- Identify the potential for natural flooding (ie is the site located in an area susceptible to flooding or within the 1956 River Murray floodplain) and describe any preventative measures that may be used if applicable.
- Describe the physical characteristics of the culture/evaporation/settlement ponds including lining, depth, size, water capacity and overflow provisions.
- Describe how the capacity of the settlement/evaporation ponds was determined to ensure the adequate storage and/or treatment of wastewater.
- Set out the wastewater discharge rate from the proposed aquaculture system, how it will be treated and where it will be disposed of. Indicate whether the discharge point be able to accommodate the volume of wastewater discharged to it.
- Describe the characteristics of the location if the wastewater is to be discharged into the aquatic environment and indicate where it will be discharged to (eg wave action, current flows, benthic environment). Photos and/or videos may prove useful for this purpose.
- Describe where culture equipment will be cleaned and how wash-down water and associated wastes will be contained and disposed of.
- Identify any chemicals that may be used in association with the farming activity, what they will be used for, and how they will be applied and disposed.

### Waste management

- Identify the types and volumes of organic waste that may be produced on the site (eg fish waste from mortalities and/or processing, organic sludge, etc) and how or where they will be disposed.
- Provide any names and contact details of commercial waste disposal services proposed to be used for waste disposal (eg: waste depots, composters).
- Provide an accurate description of burial or composting of organic waste and how this will be undertaken if it is proposed on site.
- Identify other forms of waste that may be generated on site (eg disused equipment, empty feedbags, chemicals, etc) and how this will be managed.

### Site contamination

- Identify potential sources of contaminants (eg organic sludge from cleaning filters, fish waste and mortalities) and describe how you intend on managing these potential contaminants.

- Identify any hazardous substances (eg fuel, oil, grease, chemicals) and how they will be stored on the site and describe how you intend on managing contamination in the event of a major spillage.
- Describe, with regards to pump-ashore operations, how potential site contamination from the build-up of organic matter at the end of the discharge pipe will be avoided.

### Air quality and noise

- Indicate the distance between the proposed site for the aquaculture activity and the nearest neighbour who may be affected by noise and air quality issues.
- Identify the likely sources of noise (eg pumps, generators, bird-scarers, etc) and how they will be managed.
- Identify the likely sources of odour (eg feed, organic waste, mortalities) and how they will be managed.

### Scouring/shading (pump-ashore operations only)

- Provide a description of the intake and outlet pipes used in the operation, how they will be secured to the sea floor, and what measures will be put in place to prevent scouring and/or shading.
- Describe flora and fauna that exist in the near vicinity of the pipe that may be affected by scouring and/or shading. Photos or videos of the area may be useful for this purpose.

### Environmental monitoring

- Provide any environmental monitoring information for the site/activity that may assist the EPA in their assessment process.

### Other useful documents

The following EPA documents provide further information on some of the topics discussed in this guideline:

*EPA Fact Sheet: Aquaculture management and the Environment Protection (Water Quality) Policy 2003*, viewed 18 May 2007, <[www.epa.sa.gov.au/pdfs/aquaculture\\_mgmt.pdf](http://www.epa.sa.gov.au/pdfs/aquaculture_mgmt.pdf)>.

*EPA Information: Environmental noise (2006)*, viewed 18 May 2007, <[www.epa.sa.gov.au/pdfs/info\\_noise.pdf](http://www.epa.sa.gov.au/pdfs/info_noise.pdf)>.

*EPA Guidelines: Bunding and spill management (2007)*, viewed 18 May 2007, <[www.epa.sa.gov.au/pdfs/guide\\_bunding.pdf](http://www.epa.sa.gov.au/pdfs/guide_bunding.pdf)>.

**FURTHER INFORMATION*****Legislation***

Legislation may be viewed on the internet at: <[www.legislation.sa.gov.au](http://www.legislation.sa.gov.au)>

Copies of legislation are available for purchase from:

Service SA Government Legislation Outlet 101 Grenfell Street Adelaide SA 5000	Telephone: Facsimile: Internet: Email:	13 23 24 (08) 8204 1909 < <a href="mailto:shop.service.sa.gov.au">shop.service.sa.gov.au</a> > < <a href="mailto:servicesa@saugov.sa.gov.au">servicesa@saugov.sa.gov.au</a> >
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***For general information please contact:***

Environment Protection Authority GPO Box 2607 Adelaide SA 5001	Telephone: Facsimile: Freecall (country): Internet: E-mail:	(08) 8204 2004 (08) 8124 4670 1800 623 445 < <a href="http://www.epa.sa.gov.au">www.epa.sa.gov.au</a> > < <a href="mailto:epainfo@epa.sa.gov.au">epainfo@epa.sa.gov.au</a> >
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