
Department of
**Primary Industries and Regional Development**

# AQUACULTURE MANAGEMENT AND ENVIRONMENTAL MONITORING PLAN (MEMP)

# GUIDANCE STATEMENT

November 2023

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## DEFINITIONS AND ABBREVIATIONS

**Aquaculture Development Zone:** A designated area of State water selected according to its suitability for a specific aquaculture sector and established with an effective management framework including a streamlined environmental approvals process for organisations that want to establish an aquaculture business in these zones. Three zones have been developed, one in the Kimberley,one in the Mid-West and one in the Great Southern.

**Aquaculture Gear:** Any equipment, implement or device, apparatus or other things used or designed for use for, or in connection with, aquaculture; whether the gear contains fish or not, and whether the gear is used for aquaculture or for navigational lighting or marking as a part of aquaculture safety.

**Environmental Monitoring and Management Plan (EMMP):** A document produced as part of the EPA environmental assessment process when a project is of a scale to be referred. The purpose of an EMMP is to ensure a large-scale proposal is managed to achieve identified environmental values and objectives. The EMMP provides details of the type and extent of environmental monitoring to be undertaken and outlines the management responses should identified limits be reached. The results of the monitoring program are reported to EPA in Annual Compliance Reports. The EMMP is a separate requirement to the MEMP, however because of the overlap the MEMP can refer to information contained in the EMMP rather than repeating it.

**Guidance statement (MEMP Guidance Statement):** A document providing guidance to proponents on specific matters such as a MEMP.

**Independent auditor:** A suitably qualified audit provider that has no affiliation with any company whose MEMP Reports or operations have been selected for audit.

**Management Policy:** The Management Policy developed by DPIRD to regulate and manage general aquaculture activities within an Aquaculture Development Zone.

**MEMP Report:** A document completed by the proponent annually, to provide DPIRD with the information specified in the template.

**Ministerial Statement:** A Ministerial Approval Statement issued under s45(5) of the *Environmental Protection Act 1986*. A Ministerial Statement provides details of the project and specifies matters such as timelines, compliance reporting requirements, an EMMP and relevant notes.

**Natural waterway:** Any naturally occurring waters, including sea waters and water found on or under land.

**Prescribed fish:** Fish listed as prescribed in the *Fish Resources Management Regulations 1995* in relation to s92A of the FRMA.

**CoP:** Codes of Practice
**DBCA**: Department of Biodiversity Conservation and Attractions
**DoE:** Department of Environment (former)
**DEC:** Department of Environment and Conservation (former)
**DER:** Department of Environment Regulation
**DPIRD:** Department of Primary Industries and Regional Development
**DoT:** Department of Transport
**DWER**: Department of Water and Environmental Regulation
**EMMP:** Environmental Monitoring and Management Plan
**EP Act:** *Environmental Protection Act 1986*
**EPA:** Environmental Protection Authority
**FRMA:** *Fish Resources Management Act 1994*
**FRMR:** *Fish Resources Management Regulations 1995*
**MEMP:** Management and Environmental Monitoring Plan
**MoU:** Memorandum of Understanding
**MPRA:** Marine Parks and Reserves Authority
**OEPA:** Office of the Environmental Protection Authority

# 1 INTRODUCTION

Under the provisions of s.92A of the *Fish Resources Management Act 1994* (FRMA), unless exempt under s.92A(4), all applications for an aquaculture licence must be accompanied by a Management and Environmental Monitoring Plan (MEMP). Holders of Aquaculture licences already in force were asked to prepare and lodge a MEMP with the former Department of Fisheries (DoF) by 30 November 2013.

This Guidance Statement for developing a Management and Environmental Monitoring Plan (MEMP Guidance Statement) provides direction to applicants for an aquaculture licence and current licence holders on how to develop an effective and practical MEMP. The MEMP Guidance Statement details the management and environmental monitoring activities licence holders may need to undertake to minimise and manage the environmental impacts that might ensue from aquaculture activities. The monitoring and reporting elements outlined in the MEMP Guidance Statement will also assist in making informed decisions that can be applied to the management of project expansion.

The elements of a MEMP are based on the current understanding of monitoring requirements for certain species of fish and environmental considerations, as well as comments received from the Office of the Environmental Protection Authority (OEPA) and the former Department of Environment and Conservation (DEC), including the Marine Parks and Reserves Authority (MPRA), through previous application and referral processes.

The Aquaculture Council of Western Australia (ACWA) has developed a series of Environmental Codes of Practice (CoP) for key sectors of the aquaculture industry in WA. Compliance with CoPs is voluntary, however the ACWA CoPs have strong linkages with, and in many areas refer to, MEMPs.

Voluntary CoPs are a form of industry self-regulation that are usually flexible and can be altered quickly in response to changing industry and consumer needs. Compliance with the relevant CoP will be beneficial for the aquaculture industry as well as the individual operators, as it can demonstrate a commitment to sustainable environmental management practices; provide customers with more confidence in the quality of products and services; and ensure individual businesses are competitive. Compliance with a CoP also elevates the maturity of the industry insofar as it will be able to demonstrate a high degree of self-regulation.

DPIRD has participated in the process to develop the CoPs to ensure they are consistent with, and complementary to, the regulatory framework.

## 1.1 Purpose

The purpose of a MEMP is to enable the Department of Primary Industries and Regional Development (DPIRD) to meet its responsibilities in respect of the environmental management of aquaculture in Western Australia.

The main purposes of this MEMP Guidance Statement are to:

- outline the process for identifying the relevant environmental parameters and appropriate management strategies; and
- set out the format and content of a MEMP that applicants and licence holders must develop and implement.

The protection and management of the aquatic environment are based on an underlying set of values that reflect the contemporary views the community holds on the importance and place of the aquatic environment within society. These values change through time and are influenced by a range of concerns including the economic and social well-being of present and future generations. Licence holders are required to operate in a manner consistent with these environmental values.

The WA community places a high value on its marine environment. People expect to recreate in marine waters without suffering illness or infection; consume seafood in the knowledge that it is safe to do so; and enjoy the benefits of a healthy, abundant and diverse natural environment. The community understands the aquatic environment is common property and expects this asset will be protected now and in the future. At the same time, the community generally accepts the need to accommodate other valid uses of the environment, such as aquaculture, industrial and domestic treated wastewater discharge, shipping, mining, harbours and marinas, even though they can lower environmental quality and preclude certain social uses in localised areas.

To be sustainable and expand, marine aquaculture needs to operate in a manner that is demonstrably consistent with these values – the following MEMP components provide the mechanism to do so.

## 2 LEGISLATIVE CONTEXT

In 2005, the former Department of Environment (DoE) initiated a review of the environmental licensing and works approval regime to:

- review the trigger point for licensing (amend the activities that would be prescribed), with a view of reducing the number of licences for aquaculture activities;
- reduce the duplication of regulation and management of certain issues; and
- review environmental licence conditions with a view to removing conditions that are not necessary, useful or meaningful.

The review concluded that aquaculture activities in general are low risk and recommended the prescribed premises list should be amended to totally exclude aquaculture activities from the requirement to obtain a works approval to construct and a licence to operate under the *Environmental Protection Act 1986* (EP Act). This reform initiative was approved by the then Minister for Environment.

An appropriate regime for the environmental management of the aquaculture industry was then given effect through the establishment of a Memorandum of Understanding for the Environmental Management and Regulation of the Western Australian Aquaculture Industry (MoU), which was executed in 2010 by DoF and DEC (now DPIRD and the Department of Water and Environmental Regulation (DWER)).

The MoU covers the environmental management and regulation of the aquaculture industry for aquaculture activities that previously fell under categories 3 and 4 of Schedule 1 of the EP Act.[1]Under the MoU, DPIRD is responsible for all the operational, compliance and enforcement activities associated with the environmental management of the Western Australian aquaculture industry. This responsibility has been given effect through the removal of aquaculture operations as specified premises under the EP Act; the subsequent execution of the MoU between DoF and DEC; and ensuing amendments to the FRMA. Under the provisions of s.92A of the FRMA, new aquaculture licence applications must be accompanied by a MEMP (unless exempt under s.92A(4)); and specifies that existing licensees that require a MEMP must develop and submit the relevant documentation by 30 November 2013 in accordance with s.92A(3) of the FRMA.

## 3 POLICY CONTEXT

DoF developed the MEMP Policy, which sets out the parameters used to determine whether an applicant for an aquaculture licence, or a current aquaculture licence holder, is required to develop and implement a MEMP and the overarching process to administer them. Information on whether a MEMP is required is outlined in this MEMP

[1] Category 3 facilities – Aquaculture (ponds and tanks) premises on which:

- Marine, estuarine or freshwater fish or prawns are propagated or reared; and
- Supplementary feeding occurs, in ponds or tanks that discharge waste into waters or onto land; for a biomass of 1000kg or more.

Category 4 facilities included – Aquaculture (natural waters) premises on which:

- Marine, estuarine or freshwater fish or prawns are propagated or reared; and
- Supplementary feeding occurs, in enclosures in naturally occurring waters.

Guidance Statement. Additional information, if required, is also available to applicants and licence holders through DPIRD's website (www.dpird.wa.gov.au), by email enquiry to aquaculture@dpird.wa.gov.au

Applicants and licence holders are encouraged to discuss the scope and format of the MEMP prior to its submission. Failure to provide a MEMP as part of the application will result in refusal or delayed assessment of the application.

*When a MEMP Is Required*

The MoU applies only to marine and land-based finfish and prawn aquaculture, however, because DPIRD is responsible for the environmental management of all aquaculture sectors, s.92A of the FRMA provides for all aquaculture licence applications, and all aquaculture licence holders, to have a MEMP unless exempt under s.92A(4).

Pursuant to the current legislation, the basis for DPIRD's adopted Policy Position in respect of s.94A(4) is:

> The applicant or licence holder may be exempt from the requirements of, respectively, s.92A(1) or 92A(3) of the FRMA if the application or licence relates to the aquaculture of prescribed fish on private land.

Under the legislative framework, all marine and estuarine aquaculture operations, and land-based operations on public land, will require a MEMP. The category of MEMP will vary according to the relevant production and environmental features of the operation.

Previously the drivers behind DEC's licensing system for aquaculture considered the occurrence of supplementary feeding of the cultured species; and the discharge of waste into natural waterways or onto land. Based on these drivers, the flowchart provided in Figure 1 provides the method DPIRD uses to determine whether a MEMP is required. DPIRD officers receiving aquaculture applications or enquiries in relation to the submission of an application will use the flowchart as a guide in determining whether a MEMP should be submitted as part of the application package. The flowchart is a guide and, given the diversity of the industry, there is potential for an aquaculture activity to lie outside the parameters it sets out. For these circumstances, DPIRD will determine the requirement for a MEMP on a case-by-case basis.

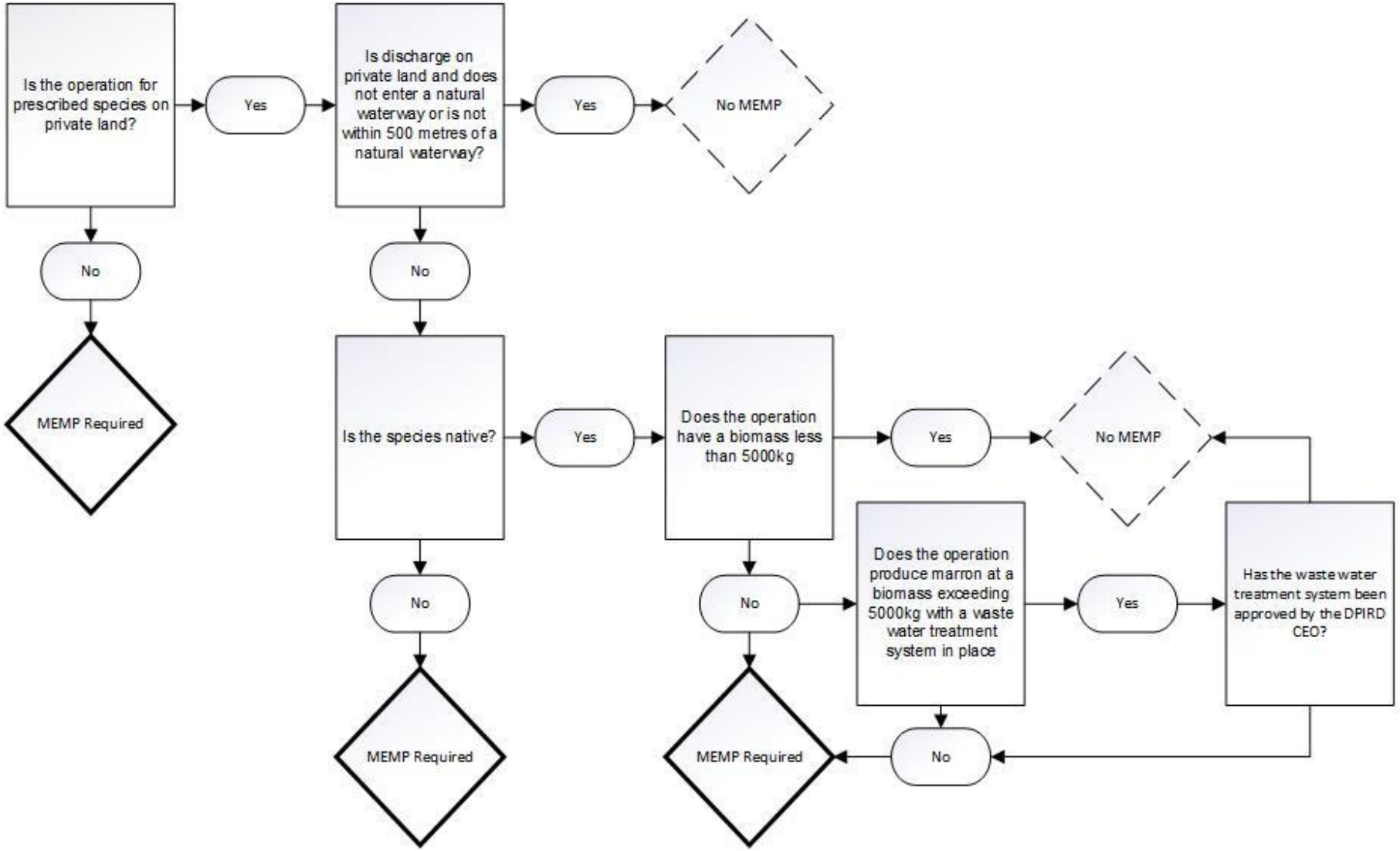


**Figure 1: Flowchart to determine what operation will require a MEMP**

Some aquaculture activities utilise a combination of production systems; for example, ponds for initial rearing and subsequent grow-out in natural waterways. In these cases, the MEMP would be required only for that activity determined as requiring a MEMP.

*Proposed Prescribed Species*

For the purpose of this MEMP Guidance Statement and section 92A of the FRMA, for aquaculture undertaken on private land, the species listed in Table 1 are the "prescribed species" that may be exempt from the requirement to develop and implement a MEMP.

- Marron (*Cherax tenuimanus* and *Cherax caiini*)
- Yabbie (*Cherax destructor* and *Cherax albidus*)
- Koonac (*Cherax plebejus* and *Cherax glaber*)
- Gilgie (*Cherax quinquecarinatus*)
- Barramundi (*Lates calcarifer*)
- Silver Perch (*Bidyanus bidyanus*)
- Golden Perch (*Macquaria ambigua*)
- Murray Cod (*Maccullochella peelii*)
- Black Bream (*Acanthopagrus butcheri*)
- Rainbow Trout (*Oncorhynchus mykiss*)
- Brown Trout (*Salmo trutta*)
- Ornamentals (various species)

**Table 1: Prescribed Species**

The list of species is based on freshwater species that are most widely grown on private land in Western Australia.

While the listed species are supported from an aquaculture point of view, it should be noted that golden perch, Murray cod, and ornamentals would still require a case-be-case translocation assessment for approval.

Applicants or existing marron famers that produce over 5000kg of biomass per annum do not require a MEMP provided they can provide written evidence that any water discharged from the property has been treated by passing through a settlement or macrophyte pond prior to discharge. This must be approved by the DPIRD CEO or delegate and may require an inspection of the property by DPIRD Compliance Officers.

*Categories of MEMP*

There are three different categories of MEMP. Each category requires the development of a document structured according to the outline provided in section 4 of this MEMP Guidance Statement. The category of MEMP to be applied to an aquaculture activity will be determined by the scale of an operation, according to factors such as:

- whether it requires approval by the Minister for Environment; and
- exists inside or outside an Aquaculture Development Zone.

The larger-scale projects that require assessment by the EPA have management, monitoring and operational requirements imposed through instruments such as an Environmental Monitoring and Management Plan (EMMP) and Ministerial Statements. These instruments impose various requirements on licence holders that may be

duplicated in the MEMP; consequently, in those cases, to avoid repetition, the relevant document can be referenced in the MEMP.

Figure 2 provides a summary of the three MEMP categories and indicates the additional documents associated with each.

**Category 1 MEMP** – EPA Assessment required

*Inside an Aquaculture Development Zone:*

- MEMP Document
- Ministerial Statement (Minister for Environment)
- DPIRD's overarching EMMP
- DPIRD's Relevant Aquaculture Development Zone Management Policy

**Category 2 MEMP** – EPA Assessment required

*Outside an Aquaculture Development Zone:*

- MEMP Document
- Ministerial Statement (Minister for Environment)
- EMMP

**Category 3 MEMP** – Smaller Scale Operations

- MEMP Document

**Figure 2: MEMP Categories and Related Documentation.**

Category 1 and Category 2 MEMPs refer to aquaculture operations that may be considered to have a significant environmental impact and consequently require EPA assessment (the majority of these would likely be marine finfish operations).

According to the outcome of the environmental assessment process, the EPA may recommend to the Minister for Environment that the project be approved. Approval is given effect through the issuing of a Ministerial Statement, of which one requirement is for the proponent to develop and implement an EMMP.[2] The purpose of an EMMP is to ensure a proposal is managed to achieve identified environmental values and objectives. Much of the information contained in the EMMP is consistent with the requirements to satisfy a MEMP.

[2] In the case of Aquaculture Development Zones, the DPIRD will develop an EMMP, to be approved by the EPA, for the whole zone.

# 4 MEMP STRUCTURE

The basic structure of a MEMP as it is outlined in this MEMP Guidance Statement is an iterative process and the structures and contents of a MEMP for individual licence holders are likely to evolve, through a process by which information generated from initial environmental monitoring may be used to inform and refine later stages. The DPIRD will therefore review this MEMP Guidance Statement periodically, in consultation with industry and where necessary DWER.

The following sections of the MEMP Guidance Statement provide an explanatory guide to the standard information required for inclusion in a MEMP and set out the required contents of a MEMP. The structure and contents of section 4 correspond with the template at **Appendix 1**. These contents are indicative only: in some cases, it may be necessary to include additional sections, or to omit unnecessary ones. Applicants are therefore encouraged to seek advice from DPIRD on the requirements for individual operations.

When developing a MEMP, applicants and licence holders are also strongly encouraged to refer to the ACWA CoP that is relevant to the species under culture.

## 4.1 Introduction

- Include information on the background and purpose of the proposed or current aquaculture activity, including its objectives.

## 4.2 Overview

### 4.2.1 Species and Quantity of Fish

- Specify the species of fish to be farmed (common and scientific names).
- Identify the source of stock for grow-out.
- Specify the stocking densities and proposed production level.

### 4.2.2 Location - Areas of Land and/or Waters

- Describe the area of land or waters on or in which the fish are to be farmed.
- Describe the class of land or waters on or in which the fish are to be farmed (that is, the suitability of the land or waters for the intended purpose and its ownership or tenure).
- Provide a map and GPS coordinates of the proposed site.

### 4.2.3 Farming Methods and Aquaculture Gear

- Describe the farming methods and aquaculture gear that will be used; for example, culture technology, production system type and intensity, water supply (flow-through or recirculating) and discharge system, including treatments (filtration, settlement or macrophyte ponds), culture units (tanks, ponds, cages).

## 4.3 Environmental Management and Monitoring

### 4.3.1 Baseline Information

- Provide current and wave data where relevant (for marine sites).
  - Include a description of the wave climate (swell and seas), in terms of wave height, wave period, and wave direction, in the vicinity of the proposed aquaculture site, for each season of the year. The key environmental factors that will determine the wave climate in a specified season are the prevailing wind patterns (velocity, periods, fetch and direction) for the region, bathymetry of the area and barriers (islands, headlands, banks, exposed reefs) in the area.

  Include a description of the prevailing water currents in the vicinity of the proposed aquaculture site, for each season.
- Identify existing Benthic Communities (location and extent)

- If the project will be in an existing, or a proposed, marine park, provide detailed information to demonstrate it will be located to ensure the environmental management targets for the marine park will not be compromised.

- Provide a description of the potential direct and indirect environmental impacts of the project, including maps and relevant information that identifies zones of impact, to determine suitable locations for reference and impact sites. Reference sites for monitoring should be established beyond the influence of the aquaculture operation. Impact sites should be located within, immediately adjacent to and within the vicinity of the aquaculture operation. (see *EPA (2011) Environmental Assessment Guideline No. 7* for further description and a schematic representation of zones of impact).

The baseline information required under this section of the MEMP will vary significantly according to the species, scale and location of the proposed aquaculture project. For example, a project that proposes to grow filter-feeding organisms that require no supplementary feeding (such as coral and bivalve shellfish species) will most likely have a lower environmental impact, and consequently will have fewer environmental management and monitoring requirements, than an intensive finfish farming activity.

### 4.3.2 Environmental Monitoring Parameters

Under the National Water Quality Management Strategy, the Australian and New Zealand Environment and Conservation Council, and Agriculture and Resource Management Council of Australia and New Zealand has developed water and sediment quality guidelines for fresh and marine water quality (ANZECC/ARMCANZ, 2000). These guidelines set out the important parameters that need to be monitored and their threshold or trigger values.

*Water Quality*

- Provide details on water quality monitoring program.
  - The water quality monitoring program should be based on key water quality performance indicators for each site that require measurement, analysis and

reporting. Proposed monitoring parameters may include (but may not be limited to):
- pH
- salinity
- temperature
- dissolved oxygen (water column and bottom)
- total nitrogen
- total phosphorous
- chlorophyll a
- turbidity

- Some measurements of water and sediment quality, such as pH and temperature, can be made by the licensee using standard hand-held instruments; however, analysis of some samples will have to be undertaken by a NATA-accredited laboratory.

*Sediments*

- Provide details of sediment monitoring program
  - The sediment monitoring program is based on key sediment quality performance indicators that require measurement, analysis and reporting. Proposed monitoring parameters used as performance indicators for measurement of impact on sediment quality may include (but may not be limited to):
    - pH of upper sediment;
    - redox discontinuity level;
    - metals;
    - total organic carbon; and
    - total phosphorous.

  - In many cases, the ongoing measurement of heavy metals is likely to be unnecessary.

### 4.3.3 Environmental Monitoring Program

The licence holder or applicant must demonstrate understanding of and propose management strategies that minimise or prevent potential environmental impacts.

- Provide a description of how each potential environmental impact will be managed to meet the ecological criteria relevant to the area, addressing:
  - how each potential impact will be monitored (the parameters, methods, the location and number of impact monitoring sites, the monitoring schedule and reporting framework);
  - how each potential impact will be managed (the management responses identified to avoid, minimise and mitigate impacts to the marine environment);
  - quantitative triggers and/or criteria against which monitoring data will be evaluated;

- detailed management responses, linked to relevant triggers, to provide assurance that any exceedance of environmental criteria will be addressed; and
- if a project is to be located within an existing or proposed marine reserve from which aquaculture is not excluded, a demonstration that impacts outside the proposed licence area or aquaculture zones will be avoided.

- Provide an analysis of the placement and establishment of environmental impact monitoring and reference sites.

4.3.4 Response Thresholds and Response Protocols

- Outline any requirements to monitor the effectiveness of management responses and enact contingency measures, if required.
  - Management options for consideration if trigger values are exceeded may include:
    - increase sampling frequency;
    - inform DPIRD;
    - reduce stocking density or in extreme cases destock;
    - reduce feed input rates;
    - fallow sites; and
    - relocate cages.

## 4.4 Impact on Protected Species and Other Aquatic Fauna

4.4.1 Marine Fauna Monitoring

- Provide details on a marine fauna monitoring program.

Information by farm staff on entanglements and interactions with marine fauna (such as wild fish, sharks, crocodiles, marine mammals and seabirds), within the aquaculture site, will be recorded on log sheets.
The proponent should report on any of the following:

- predation of cultured stock;
- escape of cultured stock;
- entanglement incidents and action taken;
- any wildlife mortalities;
- carcass retrieval and forwarding protocols for wildlife mortalities.

Species identification guides are available from the Department of Biodiversity Conservation and Attractions (DBCA) (to assist in the monitoring of animals sighted at the operation; and operators will be required to undertake induction training for on-site staff and contractors on both the documentation and species identification.

## 4.5 Biosecurity

For most aquaculture operations, biosecurity is a critical element of the MEMP. In the context of a MEMP, biosecurity relates to aquatic disease (fish health), aquatic pests and genetic issues.

Effective biosecurity procedures are vital to reduce the risk of outbreak and transmission of diseases and introduction of pest species.

The purpose of biosecurity is to:

- reduce the risk of pathogens or aquatic pest species being introduced into an aquaculture facility;
- reduce the risk of pathogens or aquatic pest species escaping from an aquaculture facility; and
- develop suitable containment and emergency procedures should pathogens or aquatic pest species enter or emerge in an aquaculture facility.

It should be noted that some species, such as abalone, will have specific biosecurity requirements. It is the responsibility of the licence holder or applicant to identify these requirements, if any, and ensure the biosecurity provisions in the MEMP are consistent with them.

### 4.5.1 General Facility Information

*Layout of the Facility*

- Provide a diagram of the facility (e.g. engineering or building plans if available). Include each building and each system, entry and exit points, and major flow patterns (fish movement, visitor and employee movement). Identify the life stages (eggs, juveniles, adults) found in each system.
  - The diagram (or separate diagrams) should contain the following (as applicable):
    - water treatment and movement within the areas of the facility's supply and discharge system (including recirculation) and water exchange percentage;
    - areas within the facility (e.g. quarantine, hatchery, nursery, grow out);
    - stock movement/flow through the facility (e.g. transferring stock from hatchery to nursery/grow out areas);
    - features important for the management of particular species being cultured (i.e. separation of specific species);
    - water shut off valves;
    - location of discharge points (including sea-based);
    - aquaculture gear, including infrastructure, tanks, drainage, covered areas and storage areas;
    - escape prevention measures (i.e. screening of waste water outlet pipes);
    - residue disposal areas (including settlement or macrophyte ponds for water treatment);
    - boat storage;
    - site security (include locations of onsite lockable doors and gates); and
    - locations of footbaths and disinfection areas.

### 4.5.2 Administrative Biosecurity Procedures

*Record keeping*

- Provide record keeping and communication procedures, which include but are not limited to:

  - translocation authorisations or approvals;
  - health certificates;
  - quarantine records;
  - disease management records;
  - reporting of fish escapes;
  - reporting of unusual mortalities;
  - reporting of a notifiable disease or suspicion of a notifiable disease;
  - daily feed records;
  - internal and external stock transfers;
  - routine stock and facility inspections;
  - facility access records (staff, contractors and visitors);
  - prophylactic treatments and the use of chemicals and pharmaceuticals (i.e. vaccines, antibiotics, pesticides); and
  - recording and reporting of biosecurity issues to the Biosecurity Manager of the operation.

*Aquaculture gear and vehicles*

- Provide biosecurity procedures that include but are not limited to:
  - the use of separate equipment for each facility area, including storage and maintenance (particular attention to quarantine and testing areas);
  - maintenance of tanks (including water quality meters, pumps, mort rings, netting, screens);
  - maintenance of sea cages (including netting, buoys and associated aquaculture gear);
  - all used aquaculture gear (i.e. grading, harvesting, feed equipment, nets, harvesting bins, baskets);
  - bird and pest netting;
  - use of separate broodstock collection equipment (if collecting from wild);
  - cleaning and disinfection, including products and their application; and
  - vehicle and vessel inspections; loading and unloading areas.

If the site is marine-based, additional factors that may need to be considered include establishment of management and maintenance procedures for:

- finfish cage/nets and biofouling;
- dive suits and equipment;
- vaccination and weighing equipment; and
- keeping vessel and infrastructure clean and free from fouling.

*Staff, contractors and visitors*

- Provide details on the appointment of a Biosecurity Manager (to be responsible for ensuring biosecurity procedures are implemented)
- Provide details on staff procedures.
  - These procedures should include but are not limited to:
    - participating in an onsite induction (who will deliver induction/training);
    - ongoing training and evaluation (including training to identify diseases);

- individual staff responsibilities (i.e. stock feeding, stock transfer, waste management);
- how to record and report biosecurity related issues;
- biosecurity emergency procedures; and
- monitoring the effectiveness of the biosecurity section of the MEMP, including updates and reviews.

*Access to and Movement in the Facility*

Monitoring and regulating access to the facility is an important aspect of biosecurity to prevent the introduction and spread of disease. To help prevent the introduction of diseases, equipment and procedures should be implemented for disinfection. These include the use of footbaths, hand-washing stations, net disinfection stations, showers and vehicle disinfection stations.

- Provide biosecurity facility access and movement procedures which include but are not limited to the management of:

  - staff, contractors and visitor access, including area restrictions;
  - clothing requirements and specified changing areas;
  - decontamination (entering and leaving specific facility areas);
  - security, including unauthorised access alarms, fences, lockable gates and doors;
  - signage at entrances explaining biosecurity rules of the facility; and
  - access to the MEMP and emergency contact numbers.

### 4.5.3 Operational Biosecurity Procedures

*Broodstock and Seed Stock*

Obtaining healthy fish (whether eggs, fry, juvenile seed stocks or adult broodstock) from a reputable supplier or source is critical for successful aquaculture production. A fish health specialist can determine species-specific health parameters and diseases of concern. Early engagement with DPIRD on regulatory requirements related to the movement of fish between sites is encouraged.

- Provide biosecurity procedures that include but are not limited to:

  - the source of brookstock and/ or seed stock;
  - isolation of introduced broodstock and/ or seed stock (include physical and epidemiological separation);
  - monitoring changes in health status;
  - disposal of any dead fish; and
  - vector and predator control.

*Feeds*

Commercially processed diets are not normally a source of infectious disease however if stored incorrectly nutrients may break down or lipids become rancid. This will cause

nutritional deficiencies and predispose fish to disease. In pond systems live foods are common and although valuable for nutrition, can be a source of disease. It is important to determine the best options for the facility.

- Provide biosecurity procedures for feed handling and storage processes, which include but are not limited to managing:

  - feed source and quality;
  - feed handling and storage (including labeling and dating);
  - feeding processes including avoiding cross contamination; and
  - biomass assessments to gauge optimal feeding requirements (particularly for sea cages).

- If live feed is used, provide details of:

  - translocation approval or authorisation if non-endemic to the state or a particular area of the state (e.g. algal paste, fish, artemia, worms);
  - quarantine measures addressing disease risks of live feeds.

*Waste and Wastewater Management*

Where land-based aquaculture facilities are situated on absorptive soils, or located close to water resources, attention must be taken to prevent ground water contamination.

- Provide biosecurity procedures incorporating requirements from local, State and Commonwealth governments.

*Disposal of waste*

Waste must be discharged in a way that it cannot contaminate the facility.

- Provide biosecurity procedures detailing the methods of disposal, how waste will be segregated and contained, and residue disposal locations. These procedures must include details for managing the disposal of:

  - solid waste or sludge;
  - dead fish;
  - diseased, contaminated or infected fish stocks;
  - nutrient loaded wastewater; and
  - chemical or pharmaceutical waste.

*Quarantine and testing areas*

- Provide information regarding the facility quarantine and disease testing protocols and procedures.
  - To lower the risk of cross-contamination, any new stock regardless of source should be quarantined or held separate from resident stock for a defined period after arrival.

It is important to take into consideration any specific diseases of concern relating to the species being cultured. For example, diseases of concern for koi producers include koi herpesvirus (KHV), for carp Spring viremia (SVC); and for abalone producers, Abalone Viral Ganglioneuritis (AVG).

- Provide biosecurity procedures and control measures within the quarantine and testing areas; these should include, but are not limited to, management of the following:

  - quarantine time periods and testing protocols (include sampling and treatments);
  - eliminating or reducing fish stressors (conditions that stress or damage fish will make them more susceptible to disease);
  - deceased, diseased, morbid, contaminated or infected fish stocks;
  - chemical or pharmaceuticals (i.e. vaccines, antibiotics or pesticides) waste;
  - tanks (e.g. numbered);
  - decontamination protocols including clothing, footwear and footbaths (entering and leaving areas);
  - sample storage (e.g. access to freezer for keeping biological samples);
  - water quality characteristics (sea cage);
  - recovery of mortalities (sea cage);
  - observations of water parameters (temperate, oxygen, salinity, nutrients and plankton) (sea cages);
  - stocking densities (sea cages);
  - medicine plans specific to the site (sea cage); and
  - use of effective doses of prophylactic or therapeutic chemicals (sea cages).

*Prevention of Escapes*

Stock escapes from aquaculture facilities can be harmful to the environment through the potential for genetic contamination and disease and pest introduction or spread. An escape includes the unauthorised, deliberate or accidental release of any aquatic organism associated with the aquaculture of fish (whether alive or dead), including eggs, spat, spawn, seeds, spores, fry and larva, or other source of reproduction of an aquatic organism (or part only of the organism).

- Provide biosecurity procedures detailing the prevention or subsequent management of escapees which include but are not limited to:

  - screening of wastewater outlet pipes;
  - maintaining anti-predator measures to prevent access by birds and animals;
  - monitoring net and cage integrity (sea cage); and
  - checks and procedures for all production areas if an escape event is suspected.

### 4.5.4 Biosecurity Incident and Emergency Procedures

- Provide procedures for all biosecurity incidents that may occur at the facility. These incidents must be reported in accordance with the FRMA, FRMR and other relevant legislation.

Regulation 69 of the FRMR should be read and observed in conjunction with developing these incident procedures.

*Disease incidents*

- Provide biosecurity incident and emergency procedures for a disease incident to prevent the spread of disease within and external to the facility (confirmed or suspected). These procedures should include but are not limited to:

  - reporting to DPIRD within 24 hours;
  - identification of disease or suspected disease;
  - transfer prevention within areas of the facility and outside of the facility (movement of water, staff and equipment);
  - obtaining samples and disease diagnosis;
  - management of diseased and non-diseased stock;
  - treatment administered;
  - destruction and disposal of diseased or deceased stock if required;
  - investigation into disease outbreak;
  - emergency contact details of staff and external authorities; and
  - revision of operations and procedures to prevent similar incidents.

*Escape incidents*

- Provide biosecurity escape incident reporting procedures to prevent the spread of disease or aquatic pests (confirmed or suspected). These procedures should include but are not limited to:

  - reporting to DPIRD within 24 hours of becoming aware of the escape or suspected escape;
  - recapture and minimising the spread of escaped stock;
  - investigation into escape; and
  - revision of operating procedures to prevent similar future incidents

*Emergency (e.g. extreme weather events)*

- Provide emergency procedures for extreme weather events, taking into consideration:

  - design of buildings at the site and their ability to withstand extreme weather events;
  - identification of species to be removed from the facility if such an event (such as a cyclone) is forecast;
  - If feasible, removal of specific species to a safe area outside the cyclone path if a category 3, 4 or 5 (noting these may cause structural damage);
  - emergency translocation approval for identified non-endemic species (identify and apply for approval in advance);
  - implementation of these procedures within a safe period in accordance with warnings from relevant authorities.

## 4.6 Auditing

### 4.6.1 Internal Auditing Process

As in any management program an audit process will be used to measure performance in meeting the established criteria. Part audits may be conducted by company service personnel on-site, while full audits covering all aspects may be carried out by DPIRD Compliance Officers and independent external auditors.

- outline the audit mechanisms that will be adopted in self-regulation and tracking compliance to the requirements of the MEMP.

## 4.7 MEMP Review

DPIRDmay review environmental monitoring and management procedures periodically and in consultation with the licence holder. MEMPs and MEMP Reports will be assessed with a view to more efficiently and effectively targeting monitoring activities and management strategies.

Licence holders may propose changes to their MEMPs; however, any proposed changes must be documented and agreed by DPIRDt prior to implementation.

Once in operation, a MEMP will generate environmental data and information according to the monitoring requirements specified in it. The ongoing monitoring results and periodic MEMP reports may over time indicate a need to amend the monitoring requirements. Either DPIRD's CEO or the licence holder may propose an amendment to the monitoring requirements. A proposal by the licence holder to amend the MEMP must be submitted to DPIRD for consideration and approval, together with supporting information.

To ensure any proposed MEMP amendments maintain an appropriate level of environmental management for all aquaculture activities, operators will generally be required to submit at least 12 months of supporting information and data to support

any proposed amendments. The period for data collection may vary according to the project and sensitivity of the environment and will likely be determined on a case-by-case basis. To avoid duplication of reporting and submission, operators should include any proposed MEMP amendments with their annual MEMP Report. Minor administrative changes may be considered outside these timelines. Applicants should contact DPIRD to discuss such changes.

### 4.7.1 Amendments

- Provide a list of amendments, if applicable.

* * * *

# 5 REPORTING REQUIREMENTS

Licence holders will be required to submit an annual MEMP Report to DPIRD,. Annual MEMP Reports will include monitoring results from activities undertaken in compliance with the MEMP, a summary of any significant incidents relating to trigger values exceeded, reactive management actions undertaken, biosecurity measures implemented and any associated issues, chemical usage and marine fauna interactions.

## 5.1 Incident Reporting

The licence holder must report incidents to DPIRD by calling 1300 278 292 within 24 hours of:

- any suspected escape from a fish farm, or circumstances which gives rise to a significant risk of escape;
- all unusual mortalities must be reported – for each species authorised on the licence, or in the case of an application for each species on the application, the licence holder or applicant must provide a table that defines “usual” mortalities (as a percentage) for each stage of the life cycle, or culture cycle, of the species; and
- any exceedance of a monitoring trigger value (which is to be specified) and the reactive management strategies that will be undertaken.

The Licence holder will report immediately to DBCA any injury or entanglement of rare or protected fauna.

## 5.2 Annual Reporting

Operators will provide an annual MEMP Report to DPIRD in the approved format. The Report should be submitted by 31 July each year via the following means:

Submissions can be made online through the iApply system (preferred) or to aquaculture@dpird.wa.gov.au. The Aquaculture Licence number, the name of the licence holder and MEMP Report should be provided in the Subject Line of the e-mail.

# 6 RESPONSIBILITIES

## 6.1 Proponent

Aquaculture licence proponents should use this MEMP Guidance Statement to address key issues of potential concern to DPIRD and utilise the MEMP template at **Appendix 1**.

## 6.2 DPIRD

DPIRD will use the MEMP document to determine its consideration and the assessment of aquaculture licence proposals. DPIRD will consider the MEMP as part of the assessment process when considering licence applications and will provide feedback in the event the MEMP needs to be varied or otherwise amended.

# 7 REFERENCES

Australian and New Zealand Environment and Conservation Council, and Agriculture and Resource Management Council of Australia and New Zealand (2000) *Water and sediment quality guidelines for fresh and marine water quality*

*Environmental Protection Act 1986*

*Fish Resources Management Act 1994*

*Fish Resources Management Regulations 1995*

*www.dpird.wa.gov.au*

**APPENDIX 1**
MEMP Document Template