State Development Assessment Provisions guideline – State code 17: Aquaculture

March 2019

Version 1.0

Queensland Government

This publication has been compiled by Fisheries Queensland, Department of Agriculture and Fisheries.

Contents

1 Overview

1.1 Introduction

State code 17: Aquaculture (the state code) in the *State Development Assessment Provisions* (SDAP) applies to a material change of use for a new or expanding aquaculture operation. It is intended to ensure aquaculture industry development and practices are ecologically sustainable.

In achieving this purpose, aquaculture operations should be appropriately located, designed, constructed and operated to ensure that development:

1. appropriately carries out the use of fisheries and aquaculture fisheries resources (proposed broodstock and culture species)
2. meets standards in the prevention, control and eradication of disease in fish
3. suitably contains aquaculture fisheries resources to prevent escape and release
4. has the ability to prevent the entry of fisheries resources into the development area
5. has the ability to meet food and other relevant supply chain standards
6. meets the relevant standards for associated features (i.e. location of ponds, use of aquaculture furniture)
7. manages any proposed disturbance or adverse impact to fisheries resources
8. manages any displacement of commercial, recreational or Indigenous fishing access
9. monitors performance and operational procedures where required
10. rehabilitates the development area if the aquaculture use is abandoned or ends.

1.2 Purpose

The purpose of this guideline is to help applicants prepare development applications for new or expanding aquaculture farms and respond to performance outcomes and acceptable outcomes of the state code.

This guideline should be interpreted as advice that only applies to a development application for a material change of use for aquaculture, applied for under the *Planning Act 2016*.

1.3 Using this guideline

This guideline consists of four parts:

- Part 1 provides an introduction to the state code and this guideline.
- Part 2 provides an overview of the development assessment process for aquaculture, an explanation of the types of development to which the code and this guideline apply, and advice about pre-lodgement processes.
- Part 3 provides a summary of information requirements for a development application.

- Part 4 provides context and advice on supporting actions and methodology to help the applicant demonstrate compliance with the performance outcomes and acceptable outcomes of the state code.

Note: The use of this guideline alone does not guarantee compliance with all planning and environmental management requirements for an aquaculture operation.

2 Assessment framework

2.1 Development assessment process

2.1.1 State Assessment and Referral Agency

The State Assessment and Referral Agency (SARA) is responsible for delivering a coordinated, whole-of-government approach to the state's assessment of development applications. SARA provides a single agency lodgement and assessment point for development applications where the state has jurisdiction.

Under the Planning Regulation 2017, aquaculture development is considered to be a material change of use and is assessable development, unless it meets the requirements for accepted development (see 2.1.4). Development applications for aquaculture require that the relevant code in SDAP ('State code 17: Aquaculture') be addressed prior to lodging with SARA.

2.1.2 State development assessment provisions

SDAP is prescribed under the Planning Regulation 2017 and sets out the matters of state interest that the chief executive administering the *Planning Act 2016* must or may have regard to when assessing a development application (as either the assessment manager or a referral agency).

Assessment benchmarks for aquaculture development are contained in 'State code 17: Aquaculture' in SDAP. A material change of use development application for an aquaculture is required to be assessed against the provisions of the state code.

2.1.3 Application of the aquaculture state code

State code 17: Aquaculture in SDAP applies to all aquaculture development unless it meets the requirements for accepted development (see 2.1.4). Aquaculture is defined in the *Fisheries Act 1994* as the cultivation of live fisheries resources for sale.

2.1.4 Code for accepted development

Accepted development is defined under the *Planning Act 2016* as development for which a development approval is not required. A range of aquaculture developments that are considered to have lower ecological, economic and social impacts and conditions of development that can be fully codified have been categorised to be accepted development. This development is detailed in the code *Accepted development requirements for material change of use that is aquaculture* (available at fisheries.qld.gov.au). This code specifies limitations (e.g. size of aquaculture development) for each type of accepted development, beyond which that development is no longer considered to be accepted development. If development is not accepted development, it is assessable development and a development application must be lodged with the Department of State Development, Manufacturing, Infrastructure and Planning to be assessed against 'State code 17: Aquaculture' in SDAP.

Accepted development is subject to standards detailed in the code *Accepted development requirements for material change of use that is aquaculture*.

Aquaculture development that is accepted development may still require the lodgement of a development application if other aspects of the development (not the aquaculture component) are assessable against a planning scheme.

2.1.5 Other approvals

Aquaculture is an industry managed by several government agencies across all levels of government, including local councils, and state and federal governments.

In addition to requiring assessment for a material change of use for aquaculture development, an applicant may be required to meet additional statutory requirements under the *Planning Act 2016* (and other legislation) for further aspects of the development (e.g. marine plant removal).

Further approvals may be required, including a resource allocation authority for access to tidal land, marine park permits and permits for discharge, depending on the type, scale and location of the development.

2.1.6 Pre-application

A pre-lodgement meeting with SARA should be held prior to lodging the development application. This meeting will help the applicant understand the development assessment requirements under the Planning Regulation 2017. For information on how to organise a pre-lodgement meeting with SARA, please contact your local Department of State Development, Manufacturing, Infrastructure and Planning regional office (visit dsdmip.qld.gov.au).

3 Information requirements

The following information is required to be provided for a material change of use for aquaculture:

- nature of the proposed aquaculture on the premises (e.g. freshwater, land-based marine, hatchery)
- details of species, including scientific and common names, to be cultured for the proposed aquaculture operations
- total water surface area for ponds and/or tanks
- a survey plan or chart showing the location of the development (including GPS coordinates and zone reference—GDA94 preferred) and important features in the surrounding area
- a scaled site plan showing details of the structures and works associated with the proposed aquaculture operations—the site plan should describe any potential development constraints (such as flood-prone land, protected marine vegetation etc.) and must also indicate all proposed works, structures, excavations etc., including, but not be limited to:
  - for areas below the highest astronomical tide level or in Queensland waters
    i. provide physical characteristics of the site including water depth, description of the substrate (sandy, muddy, rocky etc.), existence of marine plants (e.g. seagrass meadows, mangroves, salt marsh etc.) or coral

    and

ii. indicate where any aquaculture furniture is to be placed on the area, including racks/trays, platforms, rafts, cages, buoys, pontoons, anchoring devices, service vessels

- for land-based aquaculture activities

i. physical characteristics of the site, including the nature and extent of any marine plants, the highest astronomical tide contour (if within or adjacent to the area), watercourses, etc.

ii. contour lines (showing the 1% annual exceedance probability flood event level) and other topographic features on the property like gullies and waterways

iii. depth of expected excavation in relation to the 5-metre Australian Height Datum (AHD) contour level (any works at or below the 5-metre AHD level may trigger referral for acid sulfate soils assessment and treatment)

and

iv. water intake and discharge structures, including water storage ponds and water distribution channels, nursery, brood stock and grow-out ponds, water treatment ponds and aquaculture furniture and hatchery facilities

- an aquaculture operations management plan that includes
  - details of the proposed aquaculture operating procedures, including
    i. production ponds, tanks, aquaria or other containers
    ii. water supply system
    iii. water storage
    iv. water distribution system
    v. drainage
    vi. water treatment
    vii. discharge system
    viii. storage and production of feed etc.
  - details of escape prevention practices to avoid or minimise escape of aquaculture resources, which may include, but is not limited to
    i. fencing of ponds (a requirement for ponds that contain species that may move overland such as crayfish or eel)
    ii. screening of outlet and intake pipes
    iii. enclosed facilities
    iv. treatment of water before discharging it
    v. maintaining a freeboard on pond and tank walls
    vi. predator exclusion systems
    vii. daily monitoring of equipment

viii. surface water runoff management

- details of disease prevention and management practices to avoid or minimise disease impact on the aquaculture development, which should include

  i. how you intend to monitor for disease

  ii. what quarantine practices are proposed for new stock introduced to the farm

  iii. veterinary monitoring of stock

  and

  iv. the control measures to be implemented both on a day-to-day basis and in the event of a natural disaster

- source of broodstock or culture stock.

- details of any structures proposed to be built on areas below the highest astronomical tide
- details of any proposed disturbance to wetlands within or adjacent to the proposed aquaculture operations
- details of any buffers proposed between the aquaculture activities and all freshwater or marine areas or systems
- details of any apparatus (e.g. aeration, irrigation) that will be used for aquaculture operations
- an aquaculture site management plan providing details of environmental management practices that are to be adopted to avoid or minimise environmental impact of the aquaculture development, which may include
  - rehabilitation of fish habitats, such as marine plant communities
  - restoration of the area following construction
  - feeding regimes to reduce nutrient loading
  - nutrient dispersal or disposal
  - controlled administration of chemicals
  - ensuring area is maintained and free of rubbish
  - ensuring aquaculture furniture is not placed in positions that would cause damage to fisheries resources
  - ensuring aquaculture furniture used for aquaculture would not cause a navigational or environmental hazard
  - settlement and/or waste water treatment / bioremediation ponds
  - overland discharge and land-based irrigation of discharge waters
  - nutrient stripping of effluent prior to discharge
- details of any boat or vessel to be used for the proposed aquaculture operations
- a statement addressing the relevant part(s) of ‘State code 17: Aquaculture’ in SDAP—where appropriate, the responses to the state code should reference information in other sections of the development application.

4 Assessment criteria

This part of the guideline provides additional information to help applicants demonstrate compliance with the performance outcomes or acceptable outcomes of 'State code 17: Aquaculture' in SDAP. Each section is written according to the relevant provision in the state code and provides context to the provision of supporting information and actions that may be required to demonstrate compliance with the state code.

The state code in SDAP details 27 performance outcomes (POs) in Table 17.2.2 for aquaculture development, as well as acceptable outcomes (AOs). Not every PO in the table is applicable to all proposed developments. Reference should be made to Table 17.2.1 within the state code in SDAP for guidance in relation to the applicability of the POs to particular developments.

Every application for aquaculture development must provide a statement to demonstrate compliance with PO1–PO9, whereas PO10–PO27 are only relevant to specific development depending on the type of aquaculture and species to be cultured.

Applicants are reminded that the supporting actions contained in this section cover the minimum effort required to respond to the criteria and additional assessments may be required dependent on individual project and site circumstances.

4.1 Meeting acceptable outcomes and performance outcomes—location and construction

Location

4.1.1 PO1: Type and scale of aquaculture activity

Context

Aquaculture activities may significantly differ depending on the farmed species, location of the development and the farming methods used. Aquaculture applicants are required to identify whether the proposed aquaculture facility is:

- land based marine aquaculture—aquaculture that uses seawater, diluted seawater or artesian water to grow Queensland marine and/or brackish water species such as prawns, estuary cod, mullet, coral or shellfish in ponds or tanks, on land situated above the highest astronomical tide level (the type of system must be specified, e.g. ponds, tanks etc.)
- freshwater aquaculture—aquaculture that uses freshwater, brackish water or artesian water to grow freshwater species
- marine or freshwater aquaculture in Queensland waters or on unallocated tidal land—aquaculture that is undertaken in tidal areas below the level of highest astronomical tide or in Queensland waters, including freshwater streams or lakes, for example, oyster culture, pearl oyster culture, sea ranching and cage culture (provide details of the proposed methods and techniques you intend to use, e.g. cage culture, longlines, racks and trays, sea ranching)
- hatchery—facility where broodstock are kept and induced to spawn using natural and artificial propagation techniques (e.g. injection of hormones) to produce eggs, larvae and juveniles.

Aquaculture applicants are required to provide information regarding the scale of the operation. This information must include:

- the total water surface area for the aquaculture operation

  and

- detailed information on the water surface area dedicated for production and for other activities.

Supporting actions

AO1.1

For development within a marine park, the following action will demonstrate compliance with this acceptable outcome of the state code:

- Provide evidence the proposed development is located in a marine park zone where it is supported as a use or entry with permission.

No acceptable outcome has been provided for other aquaculture developments. Therefore, the application must demonstrate compliance with the performance outcome.

PO1

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide a survey plan or chart showing the location of the development (including GPS coordinates and zone reference—GDA94 preferred) and important features, such as a water courses, wetlands and mangroves, in the surrounding area.
- Demonstrate the aquaculture development is suitably located by providing information on the methods and techniques for the aquaculture facility, including information regarding the scale of the operation.
- Any works on or near tidal land should comply with the policy *Management and protection of marine plants and other tidal fish habitats*.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes' in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.
- Proposed pilot-scale projects in marine areas, even if they are outside of the Great Sandy region, should have regard to the high level 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes' in the *Great Sandy regional marine aquaculture plan* specific to pilot-scale activities, which were developed through a whole-of-government process.
- Proposed marine sites should have regard to provisions in the *Policy for the allocation of marine aquaculture areas*.
- Proposed marine sites within the Great Sandy region should comply with the *Great Sandy regional marine aquaculture plan*.

- Proposed marine sites for oysters within Moreton Bay should comply with the *Moreton Bay oyster aquaculture plan*.

Suggested further information

Department of Primary Industries and Fisheries, aquaculture policy, *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 Dec 2004.

Department of Employment, Economic Development and Innovation, *Great Sandy regional marine aquaculture plan*. 2011.

Department of Employment, Economic Development and Innovation, *Implementation guide for the Great Sandy regional marine aquaculture plan*, 2011.

Department of Agriculture and Fisheries, *Oyster industry plan for Moreton Bay Marine Park*, December 2015.

Department of Employment, Economic Development and Innovation, *Policy for the allocation of marine aquaculture authorities*, October 2010.

Visit the Department of Agriculture and Fisheries website at fisheries.qld.gov.au for more information on site selection, and the environmental, operational and commercial factors that should influence site selection.

Visit the Department of Environment and Science website at des.qld.gov.au for more information on marine park zoning plans.

4.1.2 PO2: Impacts on the natural environment

Context

The development or expansion of the aquaculture facility must be located to avoid or minimise impacts on the natural environment. Aquaculture inherently involves some infrastructure that can have an impact on the natural environment.

Aquaculture applicants are required to determine if the proposed aquaculture facility will be located near or at the following:

- land below the highest astronomical tide
- marine plants such as mangroves, seagrass, saltmarsh and macroalgae
- wetlands
- watercourses
- riparian areas
- coral reefs
- sand dunes
- acid sulfate soils.

Supporting actions

No acceptable outcome has been provided for PO2. Therefore, the application must demonstrate compliance with the performance outcome.

PO2

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- A site plan (either a map or chart of suitable scale) is required to provide details of any works, aquaculture furniture, or other structures that are to be placed on the site. The site plan must also identify any potential constraints (such as flood-prone land, protected marine vegetation etc.) and how impacts on the natural environment will be avoided or minimised through the siting of the aquaculture development.
- The site plan must include, but is not limited to
  - for areas below the highest astronomical tide level or in Queensland waters
    i. GPS coordinates and zone reference (GDA94 preferred)
    ii. physical characteristics of the site, including water depth, description of the substrate (sandy, muddy, rocky etc.), and existence of coral or marine plants such as seagrass meadows

    and

    iii. Indicate any aquaculture furniture to be placed on the area, including racks/trays, platforms, rafts, cages, buoys, pontoons, anchoring devices, or service vessels.
  - for land-based aquaculture activities
    i. engineering drawings that indicate all proposed works, structures and excavations associated with the proposed aquaculture operation
    ii. physical characteristics of the site, including the nature and extent of any marine plants, water course etc.
    iii. contour lines (showing the 1% annual exceedance probability flood level) and other topographic features on the property like gullies and waterways

    and

    iv. depth of expected excavation in relation to the 5-metre Australian Height Datum (AHD) contour level (any works at or below the 5-metre AHD level may trigger referral for acid sulfate soils assessment and treatment).
- Any works on or near tidal land should comply with the policy *Management and protection of marine plants and other tidal fish habitats*.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes' in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Refer to PO1 reference material.

Development and construction of an aquaculture facility

4.1.3 PO3: Access to fisheries resources and fish habitats, and PO4: Commercial fishing access

Context

Marine and freshwater aquaculture undertaken in Queensland waters or on unallocated tidal land does not give the holder any right to ownership or tenure over the land. As a consequence, the aquaculture development must demonstrate it does not impact on community access to fisheries resources and fish habitats.

Supporting actions

AO3.1 and AO4

The following actions will demonstrate compliance with these acceptable outcomes of the state code:

- Identify and provide information on any existing stakeholder/s in the area of the proposed aquaculture operation and include details on how the proposed aquaculture operation will minimise conflict with other fisheries stakeholders. Existing stakeholders may include commercial fishers, recreational fishers and Traditional Owners.
- Include details and outcomes of any consultation regarding the proposal and any letters of support from industry and community groups.

PO3 and PO4

Demonstrating compliance with these performance outcomes of the state code must include, but is not limited to, the following actions:

- Identify and provide information on any existing commercial fishing activities in the area and how the proposed aquaculture operation will impact on existing commercial fishing access.
- Include details and outcomes of any consultation regarding the proposal and any letters of support from the commercial fishing industry.
- Any works on or near tidal land should comply with the policy *Management and protection of marine plants and other tidal fish habitats*.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes' in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Refer to PO1 reference material.

4.1.4 PO5: Health and productivity of fisheries resources

Context

Aquaculture development and operation has the potential to impact on flora, fauna and associated ecological processes within and surrounding a development site. An applicant should outline what measures will be undertaken to ensure the health and productivity of fisheries resources. An

aquaculture site management plan should address the impacts of the development and demonstrate how the applicant will avoid or minimise the impact of the aquaculture development.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO5

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide an aquaculture site management plan that includes details of environmental management practices that are to be adopted to avoid or minimise environmental impact of the aquaculture development. This document may include the following:
  - rehabilitation of fish habitats, such as marine plant communities
  - restoration of the area following construction
  - feeding regimes to reduce nutrient loading
  - nutrient dispersal or disposal
  - controlled administration of chemicals
  - ensuring the area is maintained and free of rubbish
  - processes to ensure the release of fisheries resources
  - ensuring aquaculture furniture is not placed in positions that would cause damage to the environment or fisheries resources
  - ensuring aquaculture furniture used for aquaculture would not cause a navigational hazard
  - settlement and/or waste water treatment ponds
  - overland discharge and land-based irrigation of discharge waters
  - nutrient stripping of effluent prior to discharge.
- Any works on or near tidal land should comply with the policy *Management and protection of marine plants and other tidal fish habitats*.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level ‘potential risks’, ‘management outcomes’, ‘planning principles’ and ‘specific management outcomes’ in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Refer to PO1 reference material.

4.1.5 PO6: Acid sulphate soils

Context

The development of an aquaculture facility has the potential to expose acid sulfate soil to oxidising conditions, which could impact soil and water by creating acidity that can also mobilise contaminants such as metals and metaloids from the soil. An applicant should outline measures that will identify, control and treat any acid sulfate soil that may be disturbed or drained as part of the developmental application process. An acid sulfate soil management plan should address the impact of development and demonstrate the quantity of acid sulfate soil and how it will be managed and treated.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO6

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide an acid sulfate soil management plan addressing the impacts of the development and demonstrate how the applicant will avoid or minimise the impact of the aquaculture development.
- Provide a site plan that identifies areas where acid sulfate soil is located within the development area.

Suggested further information

Department of Science, Information Technology, Innovation and the Arts, *Queensland acid sulfate soil technical manual: soil management guidelines*, V4.0, 2014.

4.1.6 PO7: Appropriate design and construction for species to be cultured

Context

The development and operation of an aquaculture facility is designed and constructed according to the type of species to be cultured on site.

An applicant should outline which species will be cultured as part of the application process. An operations management plan should address species, the design of the aquaculture facility and the management of the operation.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO7

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide an operational management plan detailing

  - species, including scientific and common names, to be farmed
  - production ponds, tanks, aquaria or other containers
  - water supply system
  - water storage
  - water distribution system
  - drainage
  - water treatment
  - discharge system

    and
  - storage of feed etc.
- Provide details of escape prevention practices to avoid or minimise escape of aquaculture resources, including, but not limited to
  - fencing of ponds (a requirement for crayfish, eel and other species that may move over land)
  - screening of outlet and intake pipes
  - enclosed facilities
  - treatment of water before discharging it
  - maintaining a freeboard on pond and tank walls
  - predator exclusion systems
  - daily monitoring of equipment
  - surface water runoff management.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes' in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Department of Primary Industries and Fisheries, aquaculture policy, *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 Dec 2004.

Refer to PO1 reference material.

4.1.7 PO8: Maintain integrity of aquaculture product

Context

The harvesting of aquaculture product can vary according to the species and the aquaculture facility. Apparatus used for the harvesting of aquaculture product must ensure that the product is handled and euthanised in an appropriate manner. Only fishing apparatus permitted under the Fisheries

Regulation 2008 is to be possessed and used within the premises for conducting aquaculture activities.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO8

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide written details (use diagrams if necessary) of the techniques and equipment you intend to use for harvesting, including dimensions and materials of the gear.

Note: Food safety is administered by Safe Food Queensland (safefood.qld.gov.au)

Suggested further information

No further reference material is suggested.

4.1.8 PO9: Management of disease

Context

Intensively cultured fish and shellfish are naturally susceptible to bacterial, fungal and parasitic infections, particularly during times of stress. A health management program is one way to prevent disease and maintain biosecurity in aquaculture environments. When developing a health management program, the applicant should consider current industry practices, including planning and design, introducing new animals, dealing with sick animals, chemical usage and record management.

Supporting actions

AO9.1

The following action will demonstrate compliance with this acceptable outcome of the state code:

- Provide details of a health management program that will be adopted to avoid or minimise disease impact of the aquaculture development. This should include
  - biosecurity measures to be included in the design of the aquaculture facility
  - how the applicant intends to monitor for disease
  - what quarantine practices are proposed for new stock introduced to the farm
  - veterinary monitoring of stock
  - control measures implemented both on a day-to-day basis and in the event of a disease outbreak

    and
  - for the culture of bivalve molluscs, provide details of quality assurance practices to ensure there are no public health risks associated with the operation.

PO9

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO9.1.

Suggested further information

Visit the Biosecurity Queensland website at biosecurity.qld.gov.au for information on the general biosecurity obligation under the *Biosecurity Act 2014,* which applies to all Queenslanders.

Department of Primary Industries and Fisheries, aquaculture policy, *Health management technical guidelines for aquaculture*, Version February 2008.

Department of Agriculture and Fisheries, aquaculture protocol, *Health protocol for the movement of live prawns FAMPR001*, Version 5 August 2018.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the importation and movement of live barramundi FAMPR002*, Version 4 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the translocation and movement of live bivalve molluscs FAMPR003*, Version 2 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live marine crustaceans including crabs, lobsters and bugs FAMPR004*, Version 1 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live eels FAMPR005*, Version 1 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live freshwater crayfish and prawns FAMPR006*, Version 1 June 2011.

Department of Employment, Economic Development and Innovation, aquaculture protocol, *Health protocol for the movement of live freshwater native finfish (other than barramundi and eels) FAMPR007*, Version 1 June 2011.

Department of Agriculture and Fisheries, aquaculture protocol, *Health protocol for movement of aquatic animals for aquaculture in Queensland FAMPR008*. April 2017.

Department of Employment, Economic Development and Innovation, *Management arrangements for translocation of live aquatic organisms (transport between bioregions) for aquaculture FAMOP015*, Version 2 June 2011.

Department of Primary Industries and Fisheries, aquaculture policy, *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 Dec 2004.

4.2 Meeting acceptable outcomes and performance outcomes—land-based aquaculture

4.2.1 PO10: Avoid leakage

Context

There are inherent risks in storing water in aquaculture containment structures as all earthen ponds have the capacity to leak and this can affect the groundwater or adjacent environments. Water stored in aquaculture containment structures is often characterised by biological and chemical properties that differ from those in natural surface or groundwater. Poor design, construction and maintenance of aquaculture containment structures may result in vertical or horizontal flow into soil and groundwater or embankment failure. This may cause:

- localised increases in the groundwater level
- impacts on groundwater quality (salinity or nutrients)
- waterlogging
- vegetation die back.

Aquaculture containment structures may include intake reservoirs, supply channels, production ponds, discharge channels and water treatment ponds. Usually, aquaculture is undertaken in earthen ponds 1–2 metres in depth formed by a combination of cut and fill earthworks.

Supporting actions

AO10.1

The following action will demonstrate compliance with this acceptable outcome of the state code:

- Provide an aquaculture containment management plan that provides in detail the earth works and/or materials used to construct the aquaculture containment structures.

PO10

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO10.1.

Suggested further information

Department of Primary Industries and Fisheries, aquaculture policy, *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 Dec 2004.

Risk assessment considerations can be found in the *Guidelines for constructing and maintaining aquaculture containment structures* (Department of Primary Industries and Fisheries, 2007).

4.2.2 PO11: Biosecurity and disease risks on the natural environment

Context

The development or expansion of an aquaculture facility near a waterway and wetland must be designed and constructed to minimise biosecurity and disease risks to the natural environment. These risks can be minimised by having buffers between the aquaculture activities and any waterways and

wetlands, and designed and constructed to avoid or minimise escape of aquaculture resources to Queensland waters.

Supporting actions

AO11.1

The following actions will demonstrate compliance with this acceptable outcome of the state code:

- Provide a scaled site plan showing the location of the aquaculture facility in relation to any waterways or wetlands.
- Provide details of any buffers proposed between the aquaculture activities and all freshwater and marine areas or systems.
- For land-based freshwater aquaculture, provide details of measures to prevent the release of any waters or aquaculture fisheries resources from the aquaculture facility to Queensland waters, including bird mitigation.
- For marine land-based aquaculture, provide details of proposed screening to avoid or minimise escape of aquaculture resources into Queensland waters.

AO11.2

The following action will demonstrate compliance with this acceptable outcome of the state code:

- Provide a scaled site plan showing the location of each of the containment structures that are part of the aquaculture facility.

PO11

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO11.1 and AO11.2.

Suggested further information

Visit the Biosecurity Queensland website at biosecurity.qld.gov.au for information on the general biosecurity obligation under the *Biosecurity Act 2014,* which applies to all Queenslanders.

Department of Agriculture and Fisheries, aquaculture protocol, *Health protocol for the movement of live prawns FAMPR001*, Version 5 August 2018.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the importation and movement of live barramundi FAMPR002*, Version 4 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live marine crustaceans including crabs, lobsters and bugs FAMPR004*, Version 1 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live eels FAMPR005*, Version 1 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live freshwater crayfish and prawns FAMPR006*, Version 1 June 2011.

Department of Employment, Economic Development and Innovation, aquaculture protocol, *Health protocol for the movement of live freshwater native finfish (other than barramundi and eels) FAMPR007*, Version 1 June 2011.

Department of Agriculture and Fisheries, aquaculture protocol, *Health protocol for movement of aquatic animals for aquaculture in Queensland FAMPR008*, April 2017.

Department of Employment, Economic Development and Innovation, *Management arrangements for translocation of live aquatic organisms (transport between bioregions) for aquaculture FAMOP015*, Version 2 June 2011.

Department of Primary Industries and Fisheries, aquaculture policy*, Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 Dec 2004.

4.2.3 PO12: Immunity from flooding and inundation

Context

Flood events have the potential for aquaculture fisheries resources to escape into the natural environment and potentially impact wild resources. Aquaculture applicants must ensure the containment structures used for aquaculture are not prone to flooding. Aquaculture containment structures used to cultivate aquaculture fisheries resources are required to be constructed so the lowest part of the top of the wall is above the 1% annual exceedance probability (AEP) flood level. If this information is not available, the top of the wall is to be no lower than the highest known or recorded flood level. Aquaculture containment structures that are used solely for treatment and settlement and do not contain aquaculture fisheries resources are required to be constructed so the lowest part of the top of the wall is above the 2% AEP flood level.

Supporting actions

AO12.1 and AO12.2

The following actions will demonstrate compliance with these acceptable outcomes of the state code:

- Provide a scaled site plan showing the contour lines and the 1% AEP and 2% AEP flood level events.
- Provide engineering drawings depicting the front/side elevation of aquaculture containment structures. Show the location of the 1% AEP and 2% AEP flood levels in relation to the pond wall.
- If AEP flood levels are not available, provide evidence of the highest known or recorded flood level for the property.

AO12.3

The following actions will demonstrate compliance with this acceptable outcome of the state code:

- Provide information that farm dams comply with the requirements set down for assessable aquaculture.
- Provide a scaled site plan showing the contour lines and the 1% AEP and 2% AEP flood level events.
- Provide engineering drawings depicting the front/side elevation of aquaculture containments structures. Show the location of the 1% AEP and 2% AEP flood levels in relation to the pond wall.

- Provide information on measures to prevent the ingress of stormwater into all in-ground structures.

PO12

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO12.1, AO12.2 and AO12.3:

- Complying with the policy *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities*—note that the policy provides for assessment on a case-by-case basis in some circumstances.

Suggested further information

Visit the Biosecurity Queensland website at biosecurity.qld.gov.au for information on the general biosecurity obligation under the *Biosecurity Act 2014,* which applies to all Queenslanders.

Department of Primary Industries and Fisheries, aquaculture policy, *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 Dec 2004.

4.2.4 PO13: Exclusion of wild fauna

Context

The development or expansion of a land-based aquaculture facility must be designed and constructed to exclude all juvenile or adult wild fauna (except zooplankton) from entering the facility. All juvenile or adult wild fauna (except zooplankton) are to be excluded from land-based aquaculture development through:

- design and construction to prevent entry

  and

- screening water that is to be introduced for aquaculture.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO13

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide details about how wild fauna will be excluded from the land-based aquaculture development, including proposed screening of any incoming water.
- Provide engineering drawings depicting the structures and their location within the aquaculture facility that will be implemented to prevent the entry of wild fauna.

Suggested further information

No further reference material is suggested.

4.2.5 PO14: Overland escape

Context

Certain aquaculture fisheries resources are capable of escaping overland (e.g. redclaw crayfish and eels). Additional escape prevention measures are required if these species are to be cultured. An applicant must outline what measures will be undertaken to prevent the overland escape of these aquaculture fisheries resources. Any barrier needs to be impervious to all size classes of these aquaculture fisheries resources.

Supporting actions

AO14.1

The following actions will demonstrate compliance with this acceptable outcome of the state code:

- Provide details of what measures will be implemented to prevent the overland escape of all size classes of the aquaculture fisheries resources.
- Provide a scaled site plan showing the location of barrier as part of the aquaculture facility.

PO14

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO14.1.

Suggested further information

Visit the Biosecurity Queensland website at biosecurity.qld.gov.au for information on the general biosecurity obligation under the *Biosecurity Act 2014,* which applies to all Queenslanders.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live eels FAMPR005*, Version 1 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live freshwater crayfish and prawns FAMPR006*, Version 1 June 2011.

4.2.6 PO15: Land-based bioremediation practices

Context

The quality of any water released from an aquaculture facility to Queensland waters is a significant issue for aquaculture operators. Strict water quality standards are required to be met by industry. The development or expansion of a land-based aquaculture facility may include the use of fisheries resources in treatment/settlement pond/s for the purpose of bioremediation to improve water quality prior to discharge. Land-based bioremediation practices for the purpose of aquaculture need to be designed, constructed and operated to minimise impacts on fisheries resources. As treatment/settlement ponds are being utilised to contain aquaculture fisheries resources, the lowest point of the top of the wall needs to be above the 1% annual exceedance probability flood level.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO15

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide details of the design and how the bioremediation process will be managed and maintained. Include details of the species (including scientific and common names) that will be utilised for the process of bioremediation.
- Provide engineering drawings of any settlement/treatment ponds to be utilised for bioremediation purposes depicting the front/side elevation. Show the location of the 1% annual exceedance probability flood levels in relation to the pond wall.

Suggested further information

Department of Primary Industries and Fisheries, aquaculture policy, *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 Dec 2004.

4.3 Meeting acceptable outcomes and performance outcomes—tidal aquaculture

4.3.1 Prescribed aquaculture (applies to PO16–PO22)

Context

A person cannot commence aquaculture activities in Queensland waters or on unallocated tidal land without a resource allocation authority (RAA) issued under the *Fisheries Act 1994*—which allows access to, and interference with, fish habitat in Queensland waters or on unallocated tidal land. RAAs are issued for a specified period of time and provide approval from the state government to utilise an area for the purpose of conducting an aquaculture operation. RAAs are transferable and conditions are enforced under s.79A of the *Fisheries Act 1994*.

Supporting actions

Tidal aquaculture development must address, but is not limited to, the following actions:

- Proponents are required to obtain a relevant RAA before undertaking marine / tidal aquaculture development.
- Details required in a RAA application include
  - location details
  - species details
  - technical details
  - existing stakeholders of the area
  - business plan
  - bond requirement.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level ‘potential risks’, ‘management outcomes’, ‘planning principles’ and

‘specific management outcomes’ in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Visit the Business Queensland website at business.qld.gov.au for the RAA application form and instructions for making the application.

Refer to PO1 reference material.

4.3.2 PO16: Prevent stranding or entanglement of native fauna

Context

Aquaculture infrastructure or other structures associated with aquaculture development can include cages or other enclosures to hold the aquaculture fisheries resources, buoys for floatation, and mooring lines to secure infrastructure. Placement of these structures in the marine environment has the potential to impact on native fauna, including entrapment or stranding of animals, or collision with structures and entanglement in lines. Entanglement in lines is of a particular concern for marine megafauna (e.g. whales, dugongs, dolphins, turtles and sharks). Aquaculture infrastructure and other structures are to be designed and maintained to prevent stranding or entanglement of native fauna.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO16

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide an entanglement strategy identifying risks in relation to wildlife interactions or entangled animals and how these will be mitigated and managed. The entanglement strategy should also include reporting and corrective actions in relation to wildlife interactions or entangled animals. Examples of minimising risk of entanglement include ensuring any lines are kept taut and adequately spaced, sufficient floatation and only having one horizontal line between a single set of anchor points.
- Demonstrate the proposed aquaculture infrastructure is designed and maintained to not trap, or lead to the stranding of, animals.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level ‘potential risks’, ‘management outcomes’, ‘planning principles’ and ‘specific management outcomes’ in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Visit the Australian Government Department of the Environment and Energy website at environment.gov.au for information on entanglements and the *Threat abatement plan for the impacts of marine debris on vertebrate marine life*.

Refer to PO1 reference material.

4.3.3 PO17: Species to be cultured

Context

Wild fisheries resources may be impacted by aquaculture operations though the introduction of disease, pest species and non-endemic organisms. To minimise the risk and impacts on wild fisheries, only species that are endemic to the location of the aquaculture development can be stocked.

Supporting actions

AO17.1, AO17.2 and AO17.3

The following actions will demonstrate compliance with these acceptable outcomes of the state code:

- Provide details of the species to be farmed, including scientific and common names and evidence the species are endemic to the area where the aquaculture development is proposed.

- Demonstrate ability to comply with the relevant health protocol for the importation and movement of the species that are intended to be farmed. The health protocols are listed below in 'suggested further information'.

Further, applicants must comply with the *Biosecurity Act 2014* and their general biosecurity obligations under the Act.

PO17

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO17.1, AO17.2 and AO17.3.

- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes' in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the importation and movement of live barramundi FAMPR002*, Version 4 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the translocation and movement of live bivalve molluscs FAMPR003*, Version 2 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live marine crustaceans including crabs, lobsters and bugs FAMPR004*, Version 1 June 2011.

Department of Agriculture and Fisheries, aquaculture protocol, *Health protocol for movement of aquatic animals for aquaculture in Queensland FAMPR008*, April 2017.

Department of Employment, Economic Development and Innovation, *Management arrangements for translocation of live aquatic organisms (transport between bioregions) for aquaculture FAMOP015*, Version 2 June 2011.

Visit the Biosecurity Queensland website at biosecurity.qld.gov.au for information on the general biosecurity obligation under the *Biosecurity Act 2014,* which applies to all Queenslanders.

Refer to PO1 reference material.

4.3.4 PO18: Prevent escape or release of aquaculture fisheries resources

Context

The escape or release of aquaculture fisheries resources or hatchery-reared stock has the potential to impact on wild fisheries resources, either by direct competition with wild fish or by genetic mixing of populations.

To minimise impacts to the marine environment, aquaculture structures must be designed and constructed to prevent the escape or release of aquaculture fisheries resources to minimise the risk of impacts on the natural environment.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO18

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide drawings by a Registered Professional Engineer of Queensland certifying that any proposed construction works
  - are structurally adequate for anticipated usage in all weather conditions
  - are designed to prevent the escape of aquaculture fisheries resources
  - comply with all relevant codes, including the Department of Environment and Science operational policy, building and engineering standards for tidal works.
- Provide details of escape prevention practices to avoid or minimise escape of aquaculture resources. This may include
  - predator exclusion plans
  - daily monitoring of equipment.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level ‘potential risks’, ‘management outcomes’, ‘planning principles’ and ‘specific management outcomes’ in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Department of Environment and Heritage Protection, operational policy, *Building and engineering standards for tidal works*, Version 1 March 2013.

Refer to PO1 reference material.

4.3.5 PO19: Prevent movement of structures

Context

The use of certain types of aquaculture structures may result in damage to natural ecosystems (e.g. seagrass and other marine plants or other fisheries resources such as coral). Movement of aquaculture structures may also result in collisions with other users and entanglement of megafauna (e.g. whales, dugongs, dolphins, turtles and sharks).

To minimise impacts to the marine environment, aquaculture structures must be designed and constructed to prevent any movement of infrastructure in all weather conditions.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO19

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide drawings by a Registered Professional Engineer of Queensland certifying that any proposed construction works
  - are structurally adequate for anticipated usage in all weather conditions
  - comply with all relevant codes, including the Department of Environment and Science operational policy, building and engineering standards for tidal works.
- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes' in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Department of Agriculture and Fisheries, *Oyster industry plan for Moreton Bay Marine Park*, December 2015.

Department of Environment and Heritage Protection, operational policy, *Building and engineering standards for tidal works*, Version 1 March 2013.

Refer to PO1 reference material.

4.3.6 PO20: Avoid impacts on fisheries resources

Context

Aquaculture furniture and other infrastructure associated with an aquaculture development have the potential to impact fisheries resources. Potential impacts can include direct disturbance to the substrate due to placement of structures, and seagrass dieback due to shading from the furniture. No hazardous items or materials are to be placed on, or in, the approved aquaculture area in a manner that endangers, or is likely to endanger, wild fisheries resources or the environment.

Supporting actions

AO20.1, AO20.2, AO20.3 and AO20.4

The following actions will demonstrate compliance with these acceptable outcomes of the state code:

- Provide an aquaculture site management plan that demonstrates the environmental management practices to be adopted to avoid or minimise environmental impact of the aquaculture development. This site management plan may include the following
    - measures that will be implemented to ensure aquaculture furniture avoids or minimises interference or damage with natural ecosystems (e.g. seagrass communities, marine plants or other fisheries resources such as coral)
    - measures that will be implemented to ensure aquaculture furniture and other infrastructure will not cause an environmental hazard.
- The proposed aquaculture furniture and other infrastructure is temporary and does not include fixed structures (except for supporting posts).
- The proposed aquaculture development does not include break walls, fences, boat ramps or jetties.

PO20

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO20.1, AO20.2, AO20.3 and AO20.4.

- All proposed marine sites, even if they are outside of the Great Sandy region, should have regard to the high level 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes' in the *Great Sandy regional marine aquaculture plan*, which were developed through a whole-of-government process.

Suggested further information

Department of Agriculture and Fisheries, *Oyster industry plan for Moreton Bay Marine Park*, December 2015.

Department of Environment and Heritage Protection, operational policy, *Building and engineering standards for tidal works*, Version 1 March 2013.

Refer to PO1 reference material.

4.3.7 PO21: Oyster aquaculture within Moreton Bay Marine Park

Context

The *Oyster industry plan for Moreton Bay Marine Park* provides the administrative framework for oystering in the marine park. It supports and promotes the development of the commercial oyster industry in Queensland while providing for the ecologically sustainable use of the Moreton Bay Marine Park in accordance with the *Marine Parks Act 2004*.

The *Oyster industry plan for Moreton Bay Marine Park* also details how the oyster industry is managed within the marine park and includes provisions relating to oyster furniture, storage of equipment, structures and moorings.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO21

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following action:

- Applicants must comply with the *Oyster industry plan for Moreton Bay Marine Park* if intending to conduct oyster aquaculture in Moreton Bay. Currently, the allocation of sites has been exhausted; however, potential investors are able to transfer existing oyster aquaculture authorities.

Suggested further information

Department of Agriculture and Fisheries, *Oyster industry plan for Moreton Bay Marine Park*, December 2015.

4.3.8 PO22: Pearl oyster quarantine

Context

Care must be taken to prevent disease and minimise its spread in pearl oyster farms.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO22

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following action:

- Comply with the pearl oyster quarantine information on the Business Queensland website at business.qld.gov.au.

Suggested further information

Visit the Business Queensland website at business.qld.gov.au for pearl oyster quarantine information.

4.4 Meeting acceptable outcomes and performance outcomes—aquaculture of barramundi for inland catchments

4.4.1 PO23: Ecological integrity of fauna in inland catchments

Context

Barramundi (*Lates calcarifer*) are non-indigenous to inland catchments west of the Great Dividing Range that Queensland shares with neighbouring states—specifically the Murray–Darling, Lake Eyre and Bulloo-Bancannia catchments. Cultivation of barramundi in these areas increases the risk of transmission of disease and escape of barramundi into catchments where this species does not naturally occur, resulting in establishment of a new disease agent or feral barramundi in these catchments.

Barramundi nodavirus is regarded as a significant disease risk to other freshwater species. At present, there are no records of nodavirus from any freshwater species in inland catchments, including the Murray–Darling (which spans three states and is the most economically significant catchment in Australia). Barramundi are not reported to be present in this system.

Introduced barramundi, while not able to reproduce in these systems due to environmental constraints, are an aggressive, high-order predator and may be harmful to the existing ecosystem.

In recognition of the potential for inter-species transmission of nodavirus, a higher level of biosecurity is required for aquaculture of barramundi in inland catchments.

Supporting actions

AO23.1

The following actions will demonstrate compliance with this acceptable outcome of the state code:

- Demonstrate that water from the aquaculture facility will not be released into Queensland waters.
- Provide details of screening to be utilised on containers holding barramundi to exclude vertebrate predators.
- Provide details of any buffers proposed between the aquaculture activities and all freshwater systems.
- Provide a scaled site plan showing the location of the aquaculture development in relation to:
  - any waterways or wetlands

    and
  - a contour line showing the 1% annual exceedance probability flood level.

PO23

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO23.1.

Suggested further information

Department of Primary Industries and Fisheries, aquaculture policy, *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 Dec 2004.

Department of Employment, Economic Development and Innovation, *Management arrangements for translocation of live aquatic organisms (transport between bioregions) for aquaculture FAMOP015*, Version 2 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the importation and movement of live barramundi FAMPR002*, Version 4 June 2011.

4.5 Meeting acceptable outcomes and performance outcomes—exotic fish

4.5.1 PO24: Water or organisms originating from the aquaculture of exotic fish

Context

Species that are non-indigenous to Australia have a higher associated risk of translocation and introduction of disease. There is a risk of introducing live aquatic organisms into waters where there is no existing population. In the worst-case scenario, a feral population could be established and have a significant impact on the natural flora and fauna of natural waters. Serious impacts on native freshwater fauna and habitat caused by the escape of exotics such as tilapia and carp are well documented. Introduced species often have competitive advantages over native Australian species and are able to establish pest populations (e.g. introduced carp, tilapia).

There is also a risk that imported exotic fish species may act as hosts to disease organisms not found in indigenous fish stocks, and against which indigenous species may have little or no natural resistance. The management of domestic cultivation of exotic species is important in reducing importation of potential pathogens.

To address these risks, the culture of exotic fish is not supported in in open or flow-through systems that allow discharge into natural waterways, and containers used to hold exotic fish must be screened to exclude vertebrate predators.

Supporting actions

AO24.1 and AO24.2

The following actions will demonstrate compliance with these acceptable outcomes of the state code:

- Demonstrate that water from the aquaculture facility will not be released into Queensland waters.
- Provide details of screening to be utilised on containers holding exotic fish to exclude vertebrate predators.
- Provide details of any proposed buffers between the aquaculture activities and all freshwater systems.
- Provide a scaled site plan showing the location of the aquaculture development in relation to:
  - any waterways or wetlands

    and
  - a contour line showing the 1% annual exceedance probability flood level.

PO24

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, complying with AO24.1 and AO24.2.

Suggested further information

Department of Employment, Economic Development and Innovation, *Management arrangements for translocation of live aquatic organisms (transport between bioregions) for aquaculture FAMOP015*, Version 2 June 2011.

4.5.2 PO25: Commonwealth quarantine protocols

Context

To protect Australia's fisheries resources, live fish may only be imported for the ornamental (aquarium) trade and only certain species may be imported from approved countries. Live fish for human consumption, aquaculture and pest fish are not permitted to be imported to Australia.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO25

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following action:

- If importing live fish from overseas, applicants will need to provide a copy of the Australian Government Department of Agriculture and Water Resources permit to import live ornamental fish.

Suggested further information

Department of Agriculture and Water Resources, *Importing live fish to Australia*.

4.6 Meeting acceptable outcomes and performance outcomes—aquaculture of rare, threatened and endangered species recognised in international, Commonwealth and state legislation

4.6.1 PO26: Rare, threatened or endangered animals

Context

Some species that are cultured are protected under fisheries legislation (e.g. no-take species). Others are listed species (such as endangered, vulnerable, rare or threatened) under the state *Nature Conservation Act 1992* and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999.* These species are vulnerable to exploitation and require particular regulation or protection, especially in regards to any collection of broodstock required for the aquaculture development and the fate of aquaculture product. Aquaculture developments that propose to include such species will need to demonstrate benefits to the management of the species. A recovery plan for a particular species may also be relevant. To reduce the impact on protected and listed species, additional management arrangements may apply when collecting broodstock.

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO26

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide details on how the aquaculture development can provide a net benefit to the management of the proposed aquaculture species.
- Demonstrate how any intended collection of broodstock for the aquaculture development will minimise impacts on wild populations.
- Unnecessary collection of species of conservation interest should be avoided. Accordingly, evidence should be provided to support the feasibility of the proposed culture method (e.g. demonstrated history of successful rearing of these species, or species with similar culture requirements).

Suggested further information

Department of Agriculture and Fisheries, *Guideline for broodstock and culture stock collection*, December 2014.

Refer to the *Fisheries Act 1994* and *Nature Conservation Act 1992* for fish protected under state legislation, and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* for fish listed as threatened species.

International Union for Conservation of Nature (IUCN), IUCN Red List of Threatened Species.

4.7 Meeting acceptable outcomes and performance outcomes—aquaculture in the Great Sandy Strait Marine Park

4.7.1 PO27: Development in the Great Sandy Strait

Context

The *Great Sandy regional marine aquaculture plan* is the first regional marine aquaculture management plan to be developed for Queensland. It establishes guidelines and identifies suitable sites for sustainable, non-intensive marine aquaculture development. It also streamlines and standardises the assessment process for future aquaculture applications within the boundaries of the Great Sandy Marine Park.

The plan identifies the most appropriate sites for rack, line and ranching aquaculture (but not sea cages) in line with provisions of the marine park. The sites were chosen to minimise conflict with other user groups, while considering the social and environmental value of the region, after extensive consultation between industry and government.

To further reduce the risk of impacts on these values, management controls were developed. They provide clear rules regarding approval of future aquaculture activities and the conditions under which aquaculture farms can operate. They include infrastructure design specifications, an environmental bond requirement, environmental monitoring programs and general biosecurity measures. Details are provided in the *Implementation guide for the Great Sandy regional marine aquaculture plan*

Supporting actions

No acceptable outcome has been provided. Therefore, the application must demonstrate compliance with the performance outcome.

PO27

Demonstrating compliance with this performance outcome of the state code must include, but is not limited to, the following actions:

- Provide a statement demonstrating how the proposed aquaculture activity complies with the assessment criteria and conditions of the *Great Sandy regional marine aquaculture plan*.
- Provide an environmental design and management strategy, addressing environmental matters likely to affect the operation. This may include
  - the spatial extent of the operation and the dimensions of all proposed equipment
  - any variation of the proposed equipment/farming systems from industry standards, and demonstration that the variation will ensure the same or greater environmental benefits as standard practices
  - a hatchery breeding protocol
  - a broodstock/culture stock sourcing strategy
  - a monitoring program
  - an entanglement strategy
  - the extent of intended disturbance to marine plants
  - a water quality and meat sampling program for edible shellfish.
- The *Great Sandy regional marine aquaculture plan* provides detailed descriptions of 'potential risks', 'management outcomes', 'planning principles' and 'specific management outcomes', as well as site-specific requirements for marine aquaculture in the Great Sandy region.

Suggested further information

Department of Employment, Economic Development and Innovation, *Great Sandy regional marine aquaculture plan*, 2011.

Department of Employment, Economic Development and Innovation, *Implementation guide for the Great Sandy regional marine aquaculture plan*, 2011.

5 Abbreviations

AEP	annual exceedance probability
AHD	Australian Height Datum
AO	acceptable outcome
PO	performance outcome
RAA	resource allocation authority
SARA	State Assessment and Referral Agency
SDAP	*State Development Assessment Provisions*

6 Glossary

Aquaculture	The cultivation of live fisheries resources for sale other than in circumstances prescribed under a regulation
Aquaculture fisheries resources	Live fish and other marine plants cultivated in aquaculture
Aquaculture furniture	A cage, rack, tank, tray or anything else used, or capable of being used, in aquaculture or to assist in aquaculture
Bioremediation	The branch of biotechnology that uses biological processes to overcome environmental problems (e.g. the culture of fisheries resources for the purpose of improving the quality of discharge water from treatment and settlement ponds)
Biosecurity	Protection from the risks posed by organisms to the economy, environment and people's health
Container	Any structure used to hold aquaculture fisheries resources including a basket, case or tray
Discharge	The release of wastewater into natural waterways
Disease	1. A disease, parasite, pest, plant or other thing (the disease) that has, or may have, the effect (directly or indirectly) of killing or causing illness in fisheries resources, or in humans or animals that eat fisheries resources infected with or containing the disease or 2. A chemical or antibiotic residue or 3. A species of a fish or plant that may compete against fisheries resources or other fisheries resources to the detriment of the fisheries resources or other fisheries resources
Exotic fish	Fish originating from anywhere outside Queensland
Fish	An animal (whether living or dead) of a species that throughout its life cycle usually lives: a. in water (whether fresh water or salt water) b. in or on foreshores or c. in or on land under water

	Includes: a. prawns, crayfish, rock lobsters, crabs and other crustaceans b. scallops, oysters, pearl oysters and other molluscs c. sponges, annelid worms, bêche-de-mer and other holothurians d. trochus and green snails Does not include: a. crocodiles b. protected animals under the *Nature Conservation Act 1992* c. pests under the *Pest Management Act 2001*, or d. animals prescribed under a regulation not to be fish Also includes: a. the spat, spawn and eggs of fish b. any part of fish or of spat, spawn or eggs of fish c. treated fish, including treated spat, spawn and eggs of fish d. coral, coral limestone, shell grit or star sand e. freshwater or saltwater products declared under a regulation to be fish
Fisheries resources	Includes fish and marine plants
Fishing	Includes: 1. searching for, or taking, fish 2. attempting to search for, or take, fish 3. engaging in other activities that can reasonably be expected to result in the locating, or taking, of fish 4. landing fish (from a boat or another way), bringing fish ashore or transhipping fish
Highest astronomical tide	The highest level of the tides that can be predicted to occur under average meteorological conditions and under any combination of astronomical conditions
Land	Includes foreshores and tidal and non-tidal land
Marine park	A marine park declared, or taken to be declared, under the *Marine Parks Act 2004*
Pond	An earthen in-ground container
Prescribed aquaculture	Aquaculture for which a resource allocation authority has been obtained
Resource allocation authority	A resource allocation authority issued, and in force, under part 5, division 3, subdivision 2A of the *Fisheries Act 1994*
Tank	An above-ground container used for intensive aquaculture within an enclosed facility
Tidal land	Includes reefs, shoals and other land permanently or periodically submerged by waters subject to tidal influence

Translocation	The movement of live aquatic organisms (including all stages of the organism's life cycle and any derived viable genetic material): 1. beyond its accepted distribution, or 2. to areas which contain genetically distinct populations, or 3. to areas with superior parasite or disease status
Waterway	Includes a river, creek, stream, watercourse or inlet of the sea

7 References

General

Department of Primary Industries and Fisheries, aquaculture policy, *Management arrangements for potentially high-risk activities in the context of ecologically sustainable development (ESD) for aquaculture facilities FAMOP001*, Version 1 December 2004.

Location/construction

Department of Agriculture and Fisheries, *Oyster industry plan for Moreton Bay Marine Park*, December 2015.

Department of Employment, Economic Development and Innovation, *Great Sandy regional marine aquaculture plan*, 2011.

Department of Employment, Economic Development and Innovation, *Implementation guide for the Great Sandy regional marine aquaculture plan*, 2011.

Department of Employment, Economic Development and Innovation, *Policy for the allocation of marine aquaculture authorities*, October 2010

Department of Environment and Heritage Protection, operational policy, *Building and engineering standards for tidal works*, Version 1 March 2013.

Department of Primary Industries and Fisheries, *Guidelines for constructing and maintaining aquaculture containment structures*, 2007.

Department of Science, Information Technology, Innovation and the Arts, *Queensland acid sulfate soil technical manual: soil management guidelines*, V4.0, 2014.

Species to be cultured

Department of Agriculture and Fisheries, *Guideline broodstock and culture stock collection*, December 2014.

Health/translocation

Business Queensland, website, 'Pearl oyster quarantine', 2016, <www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/aquaculture/managing-disease/pearl-oyster-quarantine>.

Department of Agriculture and Fisheries, aquaculture protocol, *Health protocol for movement of aquatic animals for aquaculture in Queensland FAMPR008*, April 2017.

Department of Agriculture and Fisheries, aquaculture protocol, *Health protocol for the movement of live prawns FAMPR001*, Version 5 August 2018.

Department of Agriculture and Fisheries, website, 'General biosecurity obligation', 2016, <https://www.daf.qld.gov.au/business-priorities/biosecurity/policy-legislation-regulation/biosecurity-act-2014/general-biosecurity-obligation>.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live eels FAMPR005*, Version 1 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live freshwater crayfish and prawns FAMPR006*, Version 1 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the movement of live marine crustaceans including crabs, lobsters and bugs FAMPR004*, Version 1 June 2011.

Department of Agriculture, Fisheries and Forestry, aquaculture protocol, *Health protocol for the translocation and movement of live bivalve molluscs FAMPR003*, Version 2 June 2011.

Department of Employment, Economic Development and Innovation, aquaculture protocol, *Health protocol for the movement of live freshwater native finfish (other than barramundi and eels) FAMPR007*, Version 1 June 2011.

Department of Employment, Economic Development and Innovation, *Management arrangements for translocation of live aquatic organisms (transport between bioregions) for aquaculture FAMOP015*, Version 2 June 2011.

Department of Primary Industries and Fisheries, *Health management technical guidelines for aquaculture*, February 2008.