



Barramundi Farming Sustainability Certification Manual

2014



Sustainably Farmed Barramundi Certification Criteria and Certification Manual



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Sustainably Farmed Barramundi Certification Criteria and Certification Manual



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Introduction

Background

Barramundi Farming Certification Program

The Australian Barramundi Farmers Association is developing a certification program addressing economic, social and environmental aspects of sustainability including hygiene and quality aspects of production. The system is proposed to include an approach which is applicable at the various scales of the industry and one that sets minimum standards whilst recognising best practice.

Beyond Compliance

Aquaculture is an Environmentally Relevant Activity in Queensland. The Barramundi farming industry has had over 15 years of the discipline of complying with and reporting on performance of the required standards. The proposed approach now builds on compliance and statutory reporting requirements to address much wider aspects of sustainability that are not just compliance based. It is proposed to take holistic approach to environmental responsibility (due diligence) beyond what is required by strict compliance.

Climate Smart Business Association Program

The QLD Department of Environment and Resource Management (DERM) has provided funding for the project. The basis of this is to undertake ecoefficiency assessment as part of the Climate Smart Business Association Program and develop innovative sustainability practices.

Status

This version is for approved for implementation by ABFA.

Sustainability Vision

The proposed vision is for:

The farming of Barramundi in Australia is ecologically sustainable, ecoefficient and produces a quality product that is internationally competitive.



Certification Program Overview

Key Components

The key components of the certification program are:

- Annual Ecoefficiency Benchmarking
- Certification Application, including the:
 - Sustainability Checklist; and
 - Risk Assessment
- Certification offsite assessment and onsite assessment.
- Annual return

Key Steps

There are 6 major steps in the certification process:

- Submission of the **Ecoefficiency Benchmarking, Sustainability Checklist** and **Risk Assessment** along with other **supporting evidence** to support with the application for Sustainability Certification to the ABFA Sustainability Auditor.
- An initial **offsite assessment** is undertaken by the approved ABFA Sustainability Auditor on the basis of the **Ecoefficiency Benchmarking, Sustainability Checklist** and **Risk Assessment** and supporting evidence.
- The Certification Panel considers the Auditors recommendation and confirms **Certification, Certification Subject to Corrective Actions** or declines Certification.
- An **onsite audit** will then be required within two years of the initial certification.
- An **Annual Return** and annual **Ecoefficiency Benchmarking** is required each year. **Re-completion** of the whole checklist is required every 2 years, along with a recertification process including an offsite assessment.
- An **onsite audit** is required every 2-3 years.

Awards Program

As a further aspect of the program an annual awards system is being established to encourage and recognise best practice sustainability and ecoefficiency in Australian Barramundi Farming.



Administration

The Barramundi Farming Sustainability Certification Program is administered by ABFA. ABFA has appointed:

- A three member independent Certification Panel to confer Certification, suggest administrative policy and interpretation to the ABFA board and advise the ABFA board on annual awards.
- A Sustainability Auditor to compile ecoefficiency benchmarking results, undertake an initial and then biennial offsite assessments, and as required on-site assessments.

The ABFA Executive Officer will administer the Certification program and coordinate the activities of the Certification panel and Sustainability Auditor.

NOTE Above is written for ultimate publication to members ..ABFA has not appointed Certification panel nor Auditor at the time of writing.

Integrity

The establishment of a Sustainability Certification program needs to have solid integrity in its processes and policies. There are a variety of global standards and guides which may apply. The ABFA program is relatively small, given the limited number of Barramundi farms in Australia and as such complete application of these international norms for Certification programs would be beyond the resources of AFBFA, This Certification program has been developed with reference to ISO 14024 *Environmental labels and declarations Type 1 environmental labelling Principles and Procedures* and ISO Guide 65 *General requirements for bodies operating product certification systems*.

Independence

One key aspect of the integrity of the ABFA Sustainability Certification system is to have an independent assessment (the audit) and a separate independent Certification Panel. This model allows ABFA to own and administer its Sustainability Certification System whilst maintaining independence and integrity.

Appeals

A formal appeals process allows an independent review in the event of any dispute.

To Gain Certification

Annual Ecoefficiency Benchmarking

The annual ecoefficiency benchmarking need to be undertaken by each farm annually around October each year for the previous financial year. This allows an overall industry benchmarking and comparison for each farm against their previous years and within the industry.



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The Auditor will send out the Ecoefficiency Benchmarking surveys and compile the results. NOTE: The auditor will keep the individual farm results confidential and reporting will report indices without identifying farms. Records will be kept to allow reporting back to each farm of comparison from their most recent years' and previous year's results.

Records will be kept confidential.

To avoid any doubt, the Ecoefficiency Benchmarking should normally happen in October each year, regardless of the anniversary of a farm's certification process.

Certification Application Process

Compliance

To gain Sustainable Barramundi Farming Certification a farm must meet all criteria unless the criteria is irrelevant and could not be applied to the farms type or situation. In the event that a farm considers it not practical or financially viable to meet or partially meet a criteria it may seek an exemption, but in such circumstance must still show how it achieves the relevant principle for that aspect.

Application by Farmer

The application process involves submission to the ABFA Sustainability Certification Auditor of the Ecoefficiency Benchmarking, Sustainability Checklist and Risk Assessment along with other supporting evidence to support with the application for Sustainability Certification to the ABFA Sustainability Auditor.

Supporting Evidence

The Farm must also submit supporting evidence with the Certification Application assessment checklist. Such evidence may include (but is not limited to):

- The Farm's signed Sustainability Policy
- Available evidence of ecoefficiency benchmarking records and calculations of benchmarking data;
- Any environmental program, action plan or environmental management system;
- Evidence of staff awareness and training (for all but micro-businesses with few staff);
- Evidence of compliance (e.g. copies of permits licences and any required records, monitoring or reporting to authorities);

In addition to documentation, photographs/maps/plans are highly desirable:

Photographs of the sites (also any plans of the site, ponds and buildings);

- Photographs of Chemical/fuel storage(s);
- Photographs of solid waste storage and disposal (if on site);
- Photographs of settlement ponds and discharge points.



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- Photographs supporting claims made in the checklist (e.g. energy efficiency measures etc.).

NOTE: Some farms may opt to pay for an optional on-site audit for initial certification. In this case the above documentation does not need to be collated, copied and submitted with the Certification Application, rather it must be available to be sighted and reviewed by the Auditor.

Initial Offsite Audit

An initial offsite audit is undertaken by the approved ABFA Sustainability Certification Auditor on the basis of the Ecoefficiency Benchmarking, Sustainability Checklist and Risk Assessment and supporting evidence.

The Auditor firstly ensures the application is complete and adequate supporting evidence is provided, if not, the Auditor send a request by email to the farm for further information.

The initial offsite audit involves thorough review of the application and supporting evidence and an interview with the farm manger and at least one key staff. Wherever practical the Auditor should seek other verification of the compliance with the Sustainable Barramundi Farming Certification criteria.

The Auditor makes a recommendation to the Certification Panel.

Certification Panel

The Certification Panel considers the Auditors recommendation and confirms Certification, Certification Subject to Corrective Actions or declines Certification. The Certification Panel does not undertaken any primary investigation but relies on the Auditors Report, in exceptional circumstances the panel may review the application and relevant supporting evidence.

Onsite Audit

An onsite audit will then be required within two years of the initial certification. After this initial audit a further onsite audit is required every 2-3 years. The Auditor makes a report which is considered by the Certification Panel and continued certification is offered (which may be conditional on corrective actions).

Annual Return

An Annual Return and annual Ecoefficiency Benchmarking is required each year. Re-completion of the whole checklist is required every 2 years, along with a recertification process including an offsite assessment.



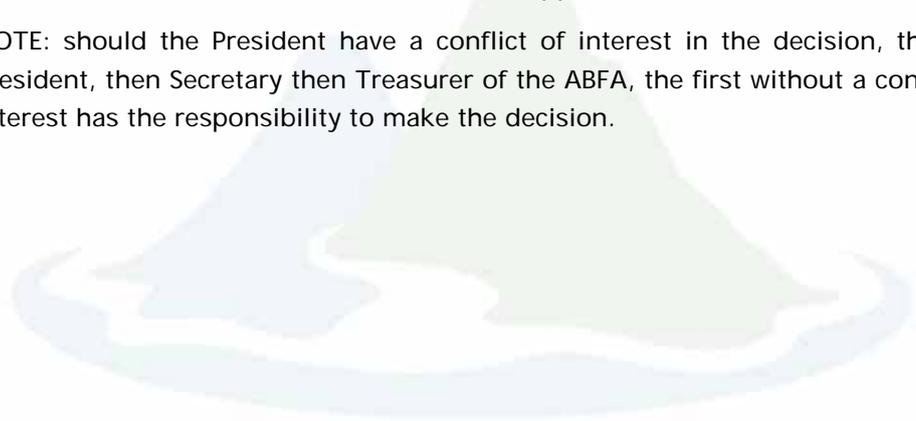
Withdrawal of Accreditation

The Certification Panel has a unique responsibility for withdrawal of certification, this may only be made by a decision of the Panel in consultation with the President of ABFA. Withdrawal may only happen after an audit find major non-compliance with the criteria and this cannot be resolved through urgent corrective actions.

Appeals - ABFA President

An accredited operator may appeal a decision to withdraw their certification in writing to the President of ABFA. The President has a responsibility to make a decision within 28 days of receiving the appeal. The President must consult with the Certification Panel regarding the reasons for withdrawal of certification and may consult with the Auditor regarding policy and interpretation of criteria. The President's decision is binding, and may not be appealed. The President must provide written advice of the decision to the appellant, the auditor.

NOTE: should the President have a conflict of interest in the decision, the Vice President, then Secretary then Treasurer of the ABFA, the first without a conflict of interest has the responsibility to make the decision.





Basis of Criteria

Development

The following best practices have been developed following three industry workshops, an industry field studies day (involving visits to three farms), and following farm visits and farmer interviews by EcoSustainAbility.

Workshops

Four key workshops and engagement with farmers have occurred.

- An initial workshop in March 2009 involved a planning process as part of ABFA's six monthly research and development workshops. The day involved four hours discussion of the potential "Green Tick" program and process toward accreditation. A funding application and scoping documents were prepared. A field day was held with visits by all attending farmers to three farms near Cairns, during this there was much discussion of best practices and this process formed the fundamental basis for the practices below.
- A further meeting was held in Cairns in June 2010 during which EcoSustainAbility presented the proposed approach and there was a workshop on practices.
- In August 2010 a workshop was held as part of the annual Prawn and Barramundi farming conference on the Gold Coast. This focussed on the metrics for the ecoefficiency survey and highlighted cases for the best practice case studies.
- A best practices discussion paper was prepared and a workshop was held in Cairns (again as a 4 hour session as part of the ABFA Research and Development workshop. This review an initial set of practices/criteria for the Green Tick program.

Global Benchmarking

In order to ensure that Barramundi farming in Australia is achieving best practice, extensive literature reviews were undertaken and criteria/best practices from a range of other fish farming and prawn farming accreditation and sustainability programs were reviewed. The initial criteria developed with Australian farmers has been extended to include sustainability initiatives used by other fish farming industries (for other species). Consequently it is important to note that the complete set of practices set out in the criteria below may not be fully implemented by any one Australian barramundi farm presently.



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The following codes and guidelines have been reviewed to ensure the practices/criteria developed do represent a reasonable “best” practice for the industry:

- *Industry Environmental Code of Best Practice for Finfish Aquaculture* (Donovan, D, 2006 published by Queensland Department of Primary Industries and Fisheries and the Queensland Finfish Aquaculture Industry).
- *Environmental Code of Practice for Australian Prawn Farmers* (Donovan, D, 2001 published by the Australian Prawn Farmers Association).
- *Friend of the Sea Certification Criteria Checklist for Aquaculture Products – Marine Aquaculture* (Friend of the Sea, 2010).
- *Friend of the Sea Certification Criteria Checklist for Aquaculture Products – Fish Farming Inland/Marine Species* (Friend of the Sea, 2010).
- *Prime Ministers Science, Engineering and Innovation Council, Sustainable Aquaculture* (Report from Councils eight meeting in May 2002, report prepared by independent working party chaired by Professor Peter Hoj).
- *Draft Standards for Responsible Salmon Aquaculture*, Salmon Aquaculture Dialogue, 2010
- *Aquaculture Facility Certification – Salmon Farms* (Global Aquaculture Alliance, responsible Aquaculture Program).
- *Aquaculture Facility Certification – Tilapia Farms* (Global Aquaculture Alliance, responsible Aquaculture Program).
- *Aquaculture Facility Certification – Channel Catfish Farms* (Global Aquaculture Alliance, responsible Aquaculture Program).
- *Scottish Salmon – The Code of Good Practice*, 2010 (published by Scottish Salmon).

Language

The practices below are intended to form the basis of a barramundi farming industry environmental certification program and as such the language use is mostly definitive (has, must, shall etc.) rather than guiding (should, consider etc.).



Principles

It is recommended that the Australian Barramundi farming sustainability certification program (ABFSCP, but known as the "Green Tick program" be based on the following principles.

Sustainability Management

*Each farm makes a **commitment to sustainability** which is communicated to staff, visitors, suppliers and customers.*

*Each farm is developed and managed to achieve **sustainability within the local ecology**.*

*Each farm **monitors** their **potential impacts** upon the natural environment.*

*Farms are located on **approved and sustainable sites** and new farms do not involve large scale disturbance of marine plants.*

*New farms and expansions are designed to **maximise ecoefficiency** and the **water quality of any discharges**.*

*Each farm has a specifically developed **environmental management approach** or documented environmental management plan which has strategies to **minimise environmental risks and maximise sustainability**.*

Farms ensure **staff understand the obligations, priorities and strategies** to achieve environmental compliance, sustainability and maximise eco-efficiency.

Farms have identified **key aspects of the local natural environment** and potential impacts are understood.

Farms have undertaken a specific **risk assessment** and have developed **mitigation strategies** and **contingency plans** which address all **foreseeable events**.

Farms strive for **continual improvement** in **sustainability** and **eco-efficiency**.

Sustainability Performance

Construction and upgrading works on farms **minimise disturbance** or re-establish soils, **erosion protection and drainage**.

Farms regularly review their **eco-efficiency**.

Water quality of receiving waters and any **discharge** waters is understood and potential effects minimised.

Water use from **groundwater** and **surface** waters is **minimised** within the constraints of farm design and efficient operations.

Energy use is **minimised** to achieve the best possible eco-efficiency within the constraints of farm design and efficient operations.

Erosion, sedimentation and any acid sulphate soils are **managed** on site and there is **minimal sediment loss** or dust from the farm.

Waste is minimised to achieve the best possible eco-efficiency within the constraints of farm design and efficient operations, waste disposal is sustainable.

Chemicals are used on farm only where their (adverse and beneficial) **affects are understood**, **storage is safe** and disposal of surplus product and containers is environmentally safe.

Off farm noise and odour impacts on neighbours and any surrounding natural environment is **minimised**.

Protected natural vegetation on farm and **natural vegetation** off farm is **not disturbed**, **weeds** on farm are **controlled** and **impacts on wildlife minimised**.

Ponds are managed to **maximise production**, achieve the best possible **eco-efficiency** and **minimise contaminants** discharged.

Farms manage fish stocks to **maintain fish health**, **reduce disease risk** and **minimise escapes**.

Farms consider the **sustainability aspects of feed** used.

Product Quality

Farms process fish and deliver to market in a manner which meets all **food safety requirements**.

Fish is of **high quality**, presents undamaged and is **without "muddy" taint**.



Applicant Details

Farm and Contact Information	Details		
Farm Name			
Location			
Physical Address			
Postal Address			
Email Address			
Farm Telephone			
Directors/Owners Mobile Telephone			
Onsite Managers Mobile telephone (if different)			
Farm Aspects (tick those that apply)	<input type="checkbox"/> Pond		<input type="checkbox"/>
	<input checked="" type="radio"/> Tank		<input type="checkbox"/>
	<input type="checkbox"/> Recirculation System		<input type="checkbox"/>
	<input type="checkbox"/> Open System		<input type="checkbox"/>
	G Growout		<input type="checkbox"/>
	N Nursery		<input type="checkbox"/>
	H Hatchery		<input type="checkbox"/>
	F Freshwater		<input type="checkbox"/>
	S Saltwater		<input type="checkbox"/>
Growout Ponds	Number	Area	ha
Settlement Ponds	Number	Area	ha
Nursery Tanks	Number	Volume	kL
Hatchery Tanks	Number	Volume	kL
Growout	Number	Area	ha



Fundamental Eligibility

The following are essential aspects for eligibility for certification.

Barramundi Farm	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The Farm grows Barramundi (<i>Lates calcarifer</i>) on a commercial basis for human consumption or further growout (for human consumption).	ALL	<input type="checkbox"/>	
The Farm is a nursery, hatchery or land based growout facility. These best practices do not encompass ocean cage Barramundi farming.	ALL	<input type="checkbox"/>	
The commitments made against criteria are assumed to be existing and continuing. In some circumstances a farm will make a commitment to meet a criteria in the certification process, yet the process/activity has yet to be implemented. If this is the case the certification process must be considered a contract to implement the process/activity. The Farm commits to implement and undertake all processes and activities claimed in the checklist on an ongoing basis.	ALL	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

NOTE: The sole Queensland sea cage farm was severely damaged during Cyclone Yasi in early 2011 and is unlikely to reopen in the near future, the large Western Australian sea cage farm has had insufficient engagement for these criteria to be developed to encompass sea cage operations.

Approved Use	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The Farm has all necessary town planning and environmental approvals.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
The Farm complies with all relevant environmental, hygiene, workplace health and safety and industrial relations laws.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

ABFA Logo and Program	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The Farm commits to only using the ABFA "Green Tick" logo in accordance with the logo usage terms and conditions, and further will not otherwise represent that the farm has AFBA or other endorsement apart from in accordance with the terms and conditions.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater



Ecoefficiency Benchmarking

Ecoefficiency Benefits

As all Barramundi farmers know, a major cost of production is energy. Electricity, fuel, LPG gas, liquid oxygen and ice are all forms of energy used on farms. A major benefit of increasing ecoefficiency on farms is to reduce operational costs. Reducing energy and waste is also likely to have major operational cost benefits as well. Water consumption tends to involve pumping on Barramundi farms and this of course has a cost for the energy (usually electricity).

There is an old adage that what is measured gets managed. By undertaking annual benchmarking of a farm's ecoefficiency it can allow individual farms to measure their ecoefficiency and allow ABFA to present the industry's overall ecoefficiency. Given the global focus on energy efficiency and carbon emissions even moves toward carbon neutral food it is important for individual farms and the industry overall to be proactive in this area.

Ecoefficiency Indices

Initial Indicators

For Barramundi Farms ecoefficiency indices have been developed, these are:

- **Energy - GJ/kg Fish:** Gigajoules of energy used per kilogram of fish production (fish sold at farm gate and increased/decreased biomass over the year). Farms input the kilowatt hours of electricity, litres of diesel etc. And using official rates the gigajoules are calculated.¹
- **Carbon Dioxide kgCO₂/kg Fish:** From the amount of energy used by a farm the carbon dioxide emissions can be calculated. The carbon dioxide emissions are calculated based on the various types of energy used (e.g. electricity, diesel, gas etc.).²

¹ Energy consumption includes all farm metered kWh of electricity, diesel, petrol, LPG and liquid oxygen. The GJ per kilo of fish (kWh electricity, LOX, diesel, petrol, LPG) have been calculated based on the following factors, Diesel: 38.68 GJ/m³ (1000L), Petrol 34.66 GJ/m³, LPG: 25.53 GJ/m³

² The draft National Carbon Offset Standard² defines scope 1, 2 and 3 emissions as:

- Scope 1 emissions: The release of greenhouse gas into the atmosphere as a direct result of activities at a Facility. Emissions also include from the pond waters, from the fish and any wastes.
- Scope 2 emissions: The release of greenhouse gas as a result of electricity generation, heating, cooling or steam that is consumed by a Facility.
- Scope 3 emissions: The release of greenhouse gas into the atmosphere that is generated in the wider economy as a consequence of a facility's activities but that are physically produced by another Facility.

In the above framework it is important to understand the diversity of Barramundi farms. At one extreme, a cage farm uses little energy as the background water column provides the oxygen, energy is whatever is used at associated hatchery(ies) and nursery(ies) and the production facility and vessels. Whereas intensive pond farming requires oxygenation mainly achieved using aerators, pond farms also usually require pumping of water as surface or ground water intake water and occasional pumping of irrigation and discharge waters. Intensive race farm requires the use of liquid oxygen.

As such the scope 1 emissions are: Diesel/petrol/LPG used by farms for vehicles, vessels, pumps, water heating and on-site electricity generation. Scope 2 emissions are: That from electricity consumption for pumps, aerators, icemakers and cold rooms, tanks heating and cooling. Scope 3 emissions include the bringing in of products with embodied energy, specific examples include: Ice, purchased by many farms and the consequential emissions are not included in the ecoefficiency survey results.



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- **Water kL/kg Fish:** The amount of water used for fish production and running the farms is measured. This include potable, “tap” water and all groundwater and surface water used for ponds. Nurseries etc. The initial 2010 survey found that many farms do not measure this very accurately at present and farms will need to move towards more accurate measurement using flow meters or hour meters etc.
- **Waste m³/kg Fish:** The waste leaving the site for disposal to landfill is the chosen indicator. Again the 2010 survey found this is often not recorded and farms will need to move towards recording this.
- **Feed kg Fish/kg Feed:** A common industry measure and used as confirmation of the farms food in food out ratio.

Future Indicators

The above set out what ABFA propose to measure for the years 2011, 2012 and 2013. During this time further work is proposed to address a better understanding of the carbon emissions from barramundi farming in an effort to be able to present barramundi to market as carbon neutral or very close to this. Two initiatives may be investigated. Better accounting of what are called Scope 2 and Scope 3 emissions, including addressing transport and storage energy and carbon emissions. Further, the sustainability of feed and carbon footprint from feed is an issue being addressed by other industries and should resources permit ABFA will attempt to understand.

Annual Survey

Each farm must submit an ecoefficiency survey report by 30 October each year, for the previous financial year. The data is submitted to ABFA’s independent appointed consultant who will keep the data confidential and report your data back to you in the context of the overall industry results. Further the report will include your farms historical results so you can track overall ecoefficiency year on year.

The annual survey for 2011 and 2012 years is included at Appendix 1. It is available as an Excel spreadsheet to enable easy completion.

Continual Improvement

An important aspect of the ABFA Sustainability Certification program is for farms to strive for continual improvement in ecoefficiency. The ABFA Ecoefficiency Report includes a range of case studies from farms with key major initiatives which have shown ecoefficiency outcomes (and reduced operating costs!) including:

- Increasing re-circulation or indeed managing to have nil discharge;
- Beneficial re-use of discharge water (e.g. on an orchard);
- Accoustic feed system, reducing waste and the inherent energy and carbon emissions in the feed;
- Pumped aeration rather than paddle wheels for smaller farms;
- Use of variable speed, axial pumps for more efficient intake water pumping and/or recirculation;
- Active aeration management (reducing aeration when not required, by manual or automatic methods);
- Use of a proprietary product “Phoslock” which has reduced aeration costs on the farm which uses it.

Farms are encouraged to review the case studies and consider their application. Where a major capital expense is required, there may be government grants available or farms can phase in procedures or bring in efficient machinery as replacements become necessary. In many cases the investment in capital cost is paid back promptly and then provides farmers with potentially greater or more reliable profit margins!



Sustainability Management Checklist

Sustainability Commitment

Principle

Each farm makes a commitment to sustainability which is communicated to staff, visitors, suppliers and customers.

Criteria

Policy	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The Farm has a written sustainability policy in place, signed by Owner(s) and/Director(s). NOTE See Appendix	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Farm has reviewed the policy within the last three years.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy includes a commitment to ecological sustainability, to understand potential impacts and minimise risks of impacts.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy includes a commitment to ecoefficiency, to reduce energy and water consumption and minimise waste in accordance with best practice.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy includes a commitment to purchasing eco-friendly and sustainable products where possible.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy includes a commitment to purchasing locally as far as practicable.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy includes a commitment to compliance with environmental, planning, safety and hygiene permits, licences and regulations.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy includes a "good neighbour" approach, recognising aspirations and concerns of neighbours through consultation and avoids practices with impacts.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy includes a commitment to continual improvement, including adopting or trialling emerging best practices.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy is posted in a prominent place(s) on the farm at locations(s) where visitors, staff, customers and suppliers a may read it.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
The Policy is reviewed at least once a year, resigned and dated by the Farm owner or at least one Director.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater



Local Setting

Principle

Each farm is developed and managed to achieve sustainability within the local ecology.

Criteria

Local Environment	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The local environment and its conservation, ecological, social and cultural significance is understood.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
<i>NOTE The following are not criteria but outline the local setting for consideration in assessing the above and other criteria.</i>			
The local ecological environment includes:	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> • Coastal, dunes, lagoon, mangroves • River, lake • Wetland • Forest/rainforest • Coral reef • National Park, Marine Park, reserve • World Heritage Area • Ramsar listed wetland • Declared fish habitat area • Endangered/migratory species habitat 	<input type="checkbox"/>	G N H F S	
The local social and cultural environment includes:	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> • Other farmland/rural land use • Urban/residential land • Commercial, retail, industrial land • Local village, town • Park, sports fields, public open space • Indigenous community 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	G N H F S	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Consider the immediate farm neighbours and the greater precinct.

Location	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The site is approved by local planning and environmental zoning and regulations.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
New sites (after 2011) have not involved clearing (other than for pipelines/drainage channels and utilities) of mangroves and other marine wetlands. Sites have not involved reclamation of tidal areas or wetlands.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater



Design

Principle

New farms and expansions are designed to maximise ecoefficiency and the water quality of any discharges.

Criteria

Design	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Overland flow does not enter ponds or tanks.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Discharge points are located to maximise dispersion, minimise impacts on hydraulics of receiving waters and disturbance to marine/aquatic ecosystems.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Ponds/tanks are above the 1:50 year flood level. Tanks are located such that they will not float or lift in a 1:50 year flood.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Ponds have adequate overflows or spillways to cope with major rainfall events (whilst still allowing some freeboard and with mechanisms to prevent escape of fish).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N F S	<input type="checkbox"/>	
Ponds have an arrangement that allows complete drainage if required.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N F S	<input type="checkbox"/>	
Ponds are orientated/ designed in relation to the prevailing wind direction(s) to avoid wave fetch and downwind bank erosion. For larger ponds, banks are stabilised to avoid erosion.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Initial design avoids (where practicable) disturbance to acid sulphate soils, or there is an Acid Sulfate Soil management plan in place.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Ponds are impervious (minimal outflow/inflow seepage) and there is a low likelihood of ground water contamination.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
NEW FARMS: Ponds and sediment ponds are designed to ensure recirculation is maximised (with allowance for seasonal variation of saline intake and rainfall salinity consideration etc.).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

The above is applicable to new farms.



Monitoring

Principle

Each farm monitors their potential impacts upon the natural environment.

Criteria

Monitoring	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where required statutorily, monitoring of the local environment is undertaken (e.g. water quality monitoring of receiving waters, ground water levels).	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
	G N H F S		
Photographic reference points are established and photographs taken annually or seasonally of the immediate environment (i.e. adjoining wetland, discharge creek).	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
	G N H F S		
Rainfall records are kept for the farm.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Best practice is to undertake a range of local environmental monitoring whether or not required by permits and licence conditions, the scale of the farm and the significance of the local environment will determine the resources and importance of this.

Environmental Management

Principle

Each farm has a specifically developed environmental management approach or documented environmental management plan which has strategies to minimise environmental risks and maximise sustainability.

Criteria

EMP	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
An environmental management approach is developed and implemented to minimise risks and maximise sustainability (including eco-efficiency).	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
	G N H F S		
Larger farms (more than ten staff) have a specifically prepared EMP. For smaller farms this Certification Manual, the environmental compliance and monitoring register and the risk assessment may form the basis for an environmental management approach.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	<input type="checkbox"/>	
	G N H F S		

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Best practice is to have an Environmental Management Plan which is written to meet all aspects of environmental due diligence and is fully implemented.



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Suggestions and Complaints	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Staff, suppliers and any contractors are encouraged to make suggestions to increase eco-efficiency and sustainability or reduce the risk of environmental harm.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
A system is in place to receive, record and respond to complaints from staff, contractors, suppliers, neighbours and community stakeholders.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
A compliant register (which may be part of a more general log book, running file or diary) is kept.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Incidents and Corrective Action	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
There is an incident register: <ul style="list-style-type: none"> For farms with less than five staff this can be in the log book. For larger farms there should be a separate incident report form and register. 	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
There is a corrective action process in place: <ul style="list-style-type: none"> For farms with less than five staff this can be in the form of notices on a notice board with a copy held on a file (where all staff can access). For larger farms there should be a separate corrective action form with sign of by the initiative staff member, the farm manager and at least one company director. 	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Incident Reporting	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
There is a process to evaluate the potential for environmental harm or non-compliance with environmental licences and permits in the event of an incident. <ul style="list-style-type: none"> Reporting is made when statutorily required or environmental may occur. 	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	



Records	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Records on monitoring and compliance are kept for at least five years.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
An Environmental file/register is kept and contains:	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> • Copies of all permits, licences and government agency correspondence <input type="checkbox"/> • The Farms sustainability policy <input type="checkbox"/> • Copies of government environmental agency guides to best practice. <input type="checkbox"/> • Monitoring information <input type="checkbox"/> • Training records <input type="checkbox"/> • Environmental complaints <input type="checkbox"/> • The Risk Assessment <input type="checkbox"/> • Any Environmental Management Plan <input type="checkbox"/> • Any contingency plans <input type="checkbox"/> • Material safety data sheets for all chemicals <input type="checkbox"/> 	G N H F S		

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Monitoring and compliance records should be kept for as long a possible... review of records a decade old can allow better management and detect changing environmental conditions.

Training and Awareness

Principle

Farms ensure staff understand the obligations, priorities and strategies to achieve environmental compliance, sustainability and maximise eco-efficiency.

Criteria

Training and Awareness	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
All staff know the overall environmental commitment and understand the responsibilities for environmental compliance and environmental protection relevant to their duties.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
For larger operations, best practice is a formal, documented training program with job duty statements, training materials and records of training. Such a program is required for more than twenty staff and desirable for more than ten staff.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Smaller farms with few staff need to have a general program between supervisors and staff to ensure the training and awareness is undertaken.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Staff are specifically advised and are aware of the farms Sustainability Policy.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Staff are encouraged to report environmental incidents and	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	



Training and Awareness	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
make suggestions for environmental, sustainability and ecoefficiency improvements.	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Understanding Potential Impacts

Principle

Each farm **monitors** their **potential impacts** upon the natural environment.

Criteria

Water Quality	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where there is any discharge of wastewater or effluent from the farm, there is some form of receiving water quality assessment.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
The potential assimilative capacity of receiving waters has been judged (e.g. by the relevant government environmental agency during farm approval) as being able to accept the quality and quantity of wastewater/effluent discharge	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	

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Guidance: Discharges from a Barramundi farm could have the potential impact on receiving water quality as their are contaminants which include:

- *nutrients (most as particulate nitrogen and phosphorous from organic material including fish faeces, algal cells and macrophytes);*
- *dissolved metabolic products from fish faeces and waste/unused feed and suspended solids. Potential impacts which need specific consideration include turbidity (with consequent issues of light attenuation in receiving waters; and*
- *dissolved oxygen (both through releases of water with higher or lower dissolved oxygen than receiving waters; and through release of water with biological oxygen demand or chemical oxygen demand which affects DO in receiving waters.*

Best practice involves a monitoring program which allows background or control site monitoring (i.e. a spatial or temporal control) and "impact" monitoring to detect any significant change in receiving water quality.

Hydrology	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The farms hydrology is understood and potential impacts on drainage patterns and surface water volumes and quality have been considered.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Groundwater	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
If any ground water (bores) are used for water supply the levels of groundwater on site and near the supply bore are understood and monitored to ensure an ongoing sustainable	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	



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Groundwater	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
supply, including making provision for environmental requirements even in foreseeable dry/drought periods.			
Should there be any use of salt water in ponds and tanks, there is monitoring of groundwater salinity, at least on an annual basis. Measures are taken to ensure ponds remain impermeable and saltwater is unlikely to infiltrate to groundwater.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Aquatic/Marine Plants	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Locally occurring aquatic and marine plants are known and the potential effects on local native aquatic and marine vegetation is minimal.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Practices are in place to ensure any disturbance to marine and aquatic plants is minimised and that exotic/weed marine/aquatic plants are not introduced to nearby natural systems.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Fauna	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Local populations of wildlife are understood, particularly any endangered or migratory species.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Local populations of predator species (e.g. birds, crocodiles etc.) are understood.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

There should not be a need for farms to engage any major outside expertise (such as consultants or scientists) however to local population (particularly any endangered wildlife on farm should be broadly monitored with seasonal surveys or a notebook kept of sightings etc.

Odour	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Local sources of odour (other than the farm) are known and the local situation with regard to odour is understood (in order to place any odour issues from the farm in a local context).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

There can be substantial issues for nearby affected neighbours that are unrelated to the farm, e.g rotting seaweed beds on a nearby foredune).



Noise	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Local sources of noise (other than the farm) are known and the local noise environment is understood (in order to place any noise issues from the farm in a local context).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

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Risk Management

Principle

Farms have undertaken a specific risk assessment and have developed mitigation strategies and contingency plans which address all foreseeable events.

Criteria

Risk Assessment	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
A risk assessment has been undertaken which considers the likelihood, magnitude and reversibility of impacts after practical mitigation strategies has been developed.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

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SEE RISK ASSESSMENT PROFORMA TOWARD END DOC (xx INSERT PAGE NUMBERS BEFORE PUBLICATION)

Contingency Planning	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
There are contingency plans in place for foreseeable (even if unlikely) events and practical strategies have been devised to minimise farm production losses and environmental impacts.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Contingency planning considers:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
<ul style="list-style-type: none"> • Power failure (onsite and from grid) <input type="checkbox"/> • Pump and/or aerator failures <input type="checkbox"/> • Filter blockages <input type="checkbox"/> • Contamination of pond water and disease outbreaks. <input type="checkbox"/> • Excessively high or low groundwater <input type="checkbox"/> • Flood and storm rainfall <input type="checkbox"/> • Cyclonic winds and storm surge <input type="checkbox"/> • Fire <input type="checkbox"/> • Chemical spillage <input type="checkbox"/> • Drought <input type="checkbox"/> 			
Any plant, machinery or products required for immediate use or during periods of inaccessibility (such as flood) to implement contingency plans are held on farm.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater



Continual Improvement

Principle

Farms strive for continual improvement in sustainability and eco-efficiency.

Criteria

Best Practices	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The Farm operations are regularly reviewed with a view to adopting current best practice for ecoefficiency, sustainability and farm productivity.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
Within the capacity of the Farms resources, new techniques are trialled and support is given to research programs.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Sustainability Performance

Farm Construction

Minimising Disturbance	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The construction of the farm should aim to minimise soil and drainage pattern disturbance. In most cases (other than minor works) a soil and water management plan) is necessary.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
Prevent overland flow from entering the disturbance area (e.g. use cut off drains and bunds).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
Minimise erosion and ease rehabilitation by stripping and storing topsoil (away from waterways).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

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In the case of existing farms, the above applies for new construction and upgrading.

Ecoefficiency

Annual Assessment	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
There is an ongoing internal ecoefficiency assessment of key indicators for energy, water, waste and feed inputs.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
There is an annual assessment of ecoefficiency which involves benchmarking against industry averages.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

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Inputs	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Ecoefficiency assessment includes all energy use, including electricity, diesel, petrol, LPG and liquid oxygen.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	



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Ecoefficiency assessment includes quality and quantity of feed.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
	G N H F S	
Ecoefficiency assessment includes assessment of water consumption.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
	G N H F S	
Ecoefficiency assessment includes waste production.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
	G N H F S	
Ecoefficiency assessment includes water discharge and net nutrient discharge (best practice).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>
	G N H F S	

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Outputs	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Ecoefficiency assessment is calculated on inputs per kilogram of fish produced at farm gate.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Ecoefficiency assessment includes the calculation of greenhouse gas emissions from the farm (up to the fish leaving the farm gate).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

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Other international standards, such as the Salmon Aquaculture Dialogue currently propose to go even further and propose to require documentation of the greenhouse gas emissions of the feed used to produce fish according to ISO 14040-14043 (ISO1997). The SAD may require that the scope of such a life cycle assessment include growing, harvesting and transportation of raw materials (vegetable and marine) to the feed mill and processing at the feed mill (although it does not require life cycle assessment of vitamin and trace elements inputs).

ABFA intends to work with the major feed suppliers and may consider requiring an understanding of the greenhouse gas emissions of feed inputs by 2015.

Water

Principles

Water quality of receiving waters and any discharge waters is understood and potential effects minimised.

Water use from groundwater and surface waters is minimised within the constraints of farm design and efficient operations.

Criteria

Receiving Waters	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
When statutorily required, receiving water quality is monitored.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
When not statutorily required, but there are likely to be discharges annually or more frequently at least quarterly receiving water quality is monitored (parameters include salinity, pH, turbidity and dissolved oxygen where relevant).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Where ponds contain saltwater and groundwater is fresh or brackish, there is at least quarterly monitoring of groundwater salinity.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Where there is any on-site re-use of wastewater (e.g. irrigation of other crops), there is an assessment of soil nutrients and assimilative capacity (e.g. phosphorous adsorption potential) at least each five years.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Where there is any on site storage of wastewater or irrigation there is a mechanism in place to monitor groundwater (e.g.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	



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Receiving Waters	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
drainage line flows or groundwater bores etc.).			

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Water Harvesting and Use	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where surface water is used, extraction only occurs in places and at rates approved. Creek and wetland water levels are monitored quarterly.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Where ground water is used, extraction only occurs in places and at rates approved. Bore levels are monitored quarterly.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Monitor and record the volume and where practical and/or statutorily required the water quality parameters of intake waters.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	

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Water Conservation	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Ponds and tanks are managed to minimise water use within the constraints of the design.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Potable water from a utility provider is not used for site irrigation.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Within the constraints of the design, recirculation, rather than discharge is maximised.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Discharge	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
All discharges are approved and planned.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Discharges do not result in any irreversible or long term increase in nutrients, phytoplankton, suspended solids or salinity levels of receiving (surface or ground) waters outside of the initial mixing zone (in the vicinity of the discharge point).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Production, treatment and storage tanks/ponds/dams are managed to ensure foreseeable rain events will not result in unplanned discharges.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
When required, discharge water quality is monitored and only complying effluent is released off-farm.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Environmental agencies are advised where there is a major or regular minor exceedences of volume or quality of discharge waters.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Discharges to receiving waters (creeks etc.) do not occur at	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	



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Discharge	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
times of low flow or incoming tidal flow when water quality impacts and bank erosion may occur.	G N H F S		
Where practicable maximise re-circulation of waters in order to minimise discharges.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Best practice is nil discharge. The Farm is designed and managed to have no discharge apart from that occurring to release stormwater from major rain events.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
The volume and where practical and/or statutorily required the water quality parameters of discharge waters is monitored and recorded..	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | **G** Growout | **N** Nursery | **H** Hatchery | **F** Freshwater | **S** Saltwater

Unless statutory requirements are stricter foreseeable rain events should be considered to be at least a 1 in 3 year rainfall event.

Energy

Aeration	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Energy efficient paddlewheels are used.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Compressed air is used to aerate ponds.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Aeration aims to ensure dissolved oxygen remains at or above 4 mg/L, additional aeration above this level is avoided.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Best practice is to have real time monitoring which allows automatic or remote control of aerators to minimise unnecessary aeration.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | **G** Growout | **N** Nursery | **H** Hatchery | **F** Freshwater | **S** Saltwater

Pumping and Filtration	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Pumps have been specifically sized and the type is fit for purpose and efficient for its use.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Energy efficient pumps are used (e.g axial flow) and/or variable speed where appropriate. If older pumps are in operation, pumps are replaced with more energy efficient pumps as they come out of service.			
NOTE: If energy efficient options are not used to replace older pumps, the payback period of more energy efficient pumps must have been assessed and be more than half the expected life of the replacement pump.			



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Pumping and Filtration	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
In Tank systems consider use of drum filtration.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Filters are sized and design to ensure capture of unwanted material and allow efficient flow rates.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Lighting	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Energy efficient lighting is used.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
There is no light pollution off site.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Security lighting is minimised and the practicality of movement controlled security lighting has been assessed.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Heating	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Heat recovery is used from groundwater, refrigeration compressors and wherever financially viable.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> · N H F S	<input type="checkbox"/>	
Heat pumps are used instead of element style heaters wherever possible.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> · N H F S	<input type="checkbox"/>	
LPG is used for any specific heating where this is more energy efficient than electric heat pumps or elements.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> · N H F S	<input type="checkbox"/>	
Diesel is not used for any specific heating unless the net carbon emissions are less or other heating methods are impractical.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> · N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Soil

Principle

Erosion, sedimentation and any acid sulphate soils are managed on site and there is minimal sediment loss or dust from the farm.

Criteria

Erosion and Sedimentation	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Undertake any new works and construction in accordance with any erosion and sediment control plans required by permits and licences.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Minimise erosion and sedimentation by:	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
<ul style="list-style-type: none"> • Limiting the area of disturbance. <input type="checkbox"/> • Reducing overland flow through disturbed areas. <input type="checkbox"/> 	G N H F S		



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Erosion and Sedimentation	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
<ul style="list-style-type: none"> • Stockpiling topsoil (and store in a bunded or silt fence enclosed area). <input type="checkbox"/> • Implementing erosion control through use of mulching, hydromulching, seeding, and erosion control matts. <input type="checkbox"/> • Minimise erosion of drainage lines through use of channel protection (e.g. concrete lining), rock rip rap etc. Protect natural drainage lines at the outflow of concentrated stormwater. <input type="checkbox"/> • Use silt fences, bunds, hay bales, rock check dams and cross drains to ensure silt is not transported to natural watercourses and/or offsite. <input type="checkbox"/> 			
There is no evidence of ongoing gulley, rill or sheet erosion on site or there is an active erosion control program to repair.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pond walls subject to wave action from prevailing winds have adequate erosion protection.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Aerators are placed to avoid scour and erosion of pond walls.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Discharge channels are lined or managed to ensure there is no ongoing erosion (if needed line below water line and vegetate or protect batters above water line).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Water velocity in discharge channels is minimised to reduce erosion potential.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pond wall batters and caps are vegetated or otherwise protected against erosion.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Farm discharge points adequately protect against scouring of beds and banks of waterways/drainage lines.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Acid Sulfate Soils	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The likely presence of acid sulfate soils is known.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Any major disturbance of acid sulphate soils is subject to an acid sulphate soils management plan in accordance with QASSIT guidelines (or other locally approved guidelines).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
The excavation and disturbance of acid sulfate soils is minimised.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Any disturbed soils are managed with burial, neutralisation, submersion or other treatment before oxidation and	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	



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Acid Sulfate Soils	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
acidification can occur.			
Any leakage of acid leachate is prevented, contained and/or treated.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Where there are acid sulfate soils known to exist there is an understanding of any groundwater and surface water level issues which could result in drying out and acidification of soils. Steps are taken to avoid acidification.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

The Queensland Acid Sulfate Soils Investigation Team have a range of guidelines for soils management and analysis.

Dust	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Farm management practices avoid the creation and release off-farm of dust.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
In dry conditions, major works such as dry pond management is undertaken using methods to avoid dust creation.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Waste

Minimise	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Whenever possible materials are purchased in bulk containers, or if possible in re-useable/refillable containers.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Feed is purchased in the largest bulk containers possible, or recycleable/reusable feed containers are used.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
Records of putrescibles, non-recyclable and recyclable waste that leave the farm are kept.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Re-Use and Recycle	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Ensure general waste streams are separated and where recycling is undertaken/collected by local government dispose of recyclables (glass, plastic containers, paper etc.) to the recycling system.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
The Farm has identified opportunities for beneficial re-use of wastes and works to ensure these wastes are so used (e.g. sediments for fertiliser, re-use of feed bags etc.).	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
All green waste is composted on site.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	



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Re-Use and Recycle	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Corpses from any fish mortality are composted on site.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Waste oil (from farm machinery and generators etc.) and is collected and disposed of to oil recycling facility.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Sustainable Disposal	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Avoid use of on-site landfill for all wastes except dead fish, green waste and sediment/sludge.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Chemical containers (e.g pesticide containers) are treated as regulated/toxic wastes and disposed of to appropriate local government managed landfill/disposal points.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Dry and wet cell batteries are treated as regulated/toxic wastes and disposed of to appropriate local government managed landfill/disposal points.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Sediment	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Sediment build up is minimised with adequate aeration, stocking densities and feed management.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Sediment is stored and disposed of appropriately, away from overland flows and in an area where any leaching of nutrients will not enter surface waters off-farm.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		
Best practice is on-site reuse of sediment (e.g. placement on pond batters for top dressing etc.)	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Chemicals

Principle

Chemicals are used on farm only where their (adverse and beneficial) affects are understood, storage is safe and disposal of surplus product and containers is environmentally safe.



Sustainably Farmed Barramundi Certification Criteria and Certification Manual



Criteria

Water Quality	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The use of copper sulphate to control algal blooms and reduce risks consequential disease is avoided and only undertaken where necessary.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Antifouling paints (containing tributyltin, copper or algaecides) are not used on any structures, floating plant or vessels in ponds.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Animal Husbandry	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Chemical use for animal husbandry is minimised and storage and use are in accordance with manufacturers guidelines.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Parasite control is undertaken using potassium permanganate, copper sulphate, formalin or peroxide only. Correct doses are used (i.e. the lowest with efficacy).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Growth hormones are not used in growout.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G F S	<input type="checkbox"/>	
Where practical vaccinations are preferred for disease prevention.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> N H F S	<input type="checkbox"/>	
Where practical vaccination is by direct injection of fingerlings, rather than by bath techniques.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> N H F S	<input type="checkbox"/>	
Antibiotics (e.g. OTC, oxytetracycline) are only used where necessary for disease control. Use is minimised and dosage rates as per regulator, manufacturer or veterinarian advice.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Only hormones and antimicrobials approved for use for fish production (by the relevant state/territory or Australian governments) are used.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Herbicides/Insecticides	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where herbicides and insecticides are necessary, only non-residual (biodegradable) products are used (e.g glyphosate based herbicides).	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> · N H F S	<input type="checkbox"/>	
Herbicides and insecticides are used strictly in accordance with manufacturers recommendations, application rates are kept to a minimum required and procedures are in place to avoid overspray into farm ponds/tanks and natural waterways.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
DDT and other toxic and/or persistent insecticides are not used.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	



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Cleaning and Disinfection	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Surfactants, corrosive and oxidising cleaners are used sparingly if required for essential farm operations to avoid potential impacts on pond/tank water quality and release to natural waterways.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Refrigerants	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where there are refrigeration systems (e.g. for icemakers, cold rooms, heat pumps) they are maintained to ensure no release of gas.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
Maintenance of refrigerant systems is undertaken by qualified technicians and involves complete gas recovery. Any on-site refrigerant gas storage is in a secure area and only qualified technicians are allowed to use.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> F S	<input type="checkbox"/>	

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Refrigerants (including the older chlorofluorocarbons and newer replacement gasses such as R22 are ozone depleting substances and must be handled with zero release techniques, recovering old gasses and avoiding inadvertent release during operation and maintenance. Following the ban on chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), substances used as substitute refrigerants such as fluorocarbons (FCs) and hydrofluorocarbons (HFCs) have also been having ozone depleting properties (albeit less than the CFC's).

Knowledge	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
The material safety data sheet (MSD) should be kept on site for all chemicals.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
Best practice is to have a copy of the MSDS near to the chemical storage (essential) and also a folder of all MSDS's in the office for reference.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
Staff know the environmental and occupational safety aspects.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | Growout | Nursery | Hatchery | Freshwater | Saltwater

Storage	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Chemicals are stored in accordance with the Material Safety Data Sheet.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
Fuels and oils in small (20L or smaller) containers are kept in a roofed, bunded area and drums for ready decanting are located on drip trays..	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	
Bulk fuels and oils are kept in bunded areas, preferably roofed.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	



G N H F S

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Australian Standard 1946 provides guidance on storage and handling of bulk fuels and oils.

Noise and Odour

Principle

Off farm noise impacts on neighbours and any surrounding natural environment is **minimised**.

Noise	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where there are noise limits on permits and licences, these are complied with.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S	<input type="checkbox"/>	
Generators, blowers and aerators, machinery and vehicles have adequate sound suppression (insulated enclosures, mufflers etc.) to avoid noise impacts on neighbours and nearby natural habitats.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S	<input type="checkbox"/>	
Where practical vegetated buffer zones, buildings and berms are used buffer obtrusive noise from any nearby noise sensitive places.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S	<input type="checkbox"/>	
Noise sources are located away from neighbouring noise sensitive places (e.g. generators are not next to neighbouring residences).	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S	<input type="checkbox"/>	
When unusual activities which may create excessive noise are to be undertaken they are planned to be undertaken during normal day time/ weekday business hours and affected neighbours are advised and consulted.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Odour	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Consider the potential impact of odour on nearby odour sensitive places (given prevailing winds).	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S	<input type="checkbox"/>	
Minimise odours from sediments and drying vegetation by the use of cover or burial.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S	<input type="checkbox"/>	
Pond sediments are dried out prior to removal/disturbance.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S		
Sediments likely to be malodorous are not disturbed when winds could spread odour and affect neighbours.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S		
Odour from disposal of dead fish after minor or major fish kills is minimised though appropriate location of disposal pits (away from odour sensitive places) and covering of fish corpses.	<input type="checkbox"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater



Vegetation and Wildlife

Principle

Protected natural vegetation on farm and natural vegetation off farm is not disturbed, weeds on farm are controlled and impacts on wildlife minimised

Criteria

Native Vegetation	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where there is (adjoining) off-farm native vegetation there is no ongoing disturbance of vegetation (especially where it is protected). Consider the risk of fire, weed invasion, sedimentation, salinity during risk assessment.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Where there is any statutorily protected vegetation on farm (such as a mangrove area, wetland, remnant vegetation etc.). This is protected and all disturbance is avoided.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Riparian vegetation on farm is not disturbed and where necessary rehabilitated to protect drainage systems.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Where there are any coastal or marine plants on farm, disturbance is avoided.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Weeds	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Any declared or noxious weeds are controlled as a matter of priority.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
The introduction of topsoil, mulch, straw and hay avoids the introduction of weeds and undesirable plants.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Where there is a choice, low impact techniques are used for weed control (e.g. non-redisual herbicides etc.).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Wildlife	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where there is likely to be any rare or endangered wildlife likely to be present on the Farm, mechanisms are taken to minimise impacts on the wildlife.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Predator Management	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Physical barriers are used as far as practical to avoid predation and wildlife becoming accustomed to farm fish in their diet.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Culling of predator species only occurs with approval of wildlife management agencies.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
For bird predation use the following measures only as	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	



Predator Management	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
<p>appropriate:</p> <ul style="list-style-type: none"> Overhead netting of cages and tanks (ponds???) <input type="checkbox"/> Overhead wires <input type="checkbox"/> Waterline level nets <input type="checkbox"/> Repellent sound emissions <input type="checkbox"/> Repellent light emissions <input type="checkbox"/> Predatory images or models <input type="checkbox"/> 	G N H F S		
<p>If crocodiles affect the Barramundi farm:</p> <ul style="list-style-type: none"> If occasional, undertake once off removal in collaboration with the State wildlife management agency or their approved handler. If regular develop exclusion approaches, including if an ongoing constant issue, fences. 	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
<p>If water rats affect the Barramundi farm:</p> <ul style="list-style-type: none"> If occasional, undertake once off removal in collaboration with the State wildlife management agency or their approved handler. If regular develop exclusion approaches, including if an ongoing constant issue, fences. 	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
<p>If eels or predator finfish have affected the Barramundi farm:</p> <ul style="list-style-type: none"> Screen intake structures with an appropriate sized mesh. 	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Pond/Tank Management

Principle

Ponds are managed to maximise production, achieve the best possible eco-efficiency and minimise contaminants discharged.

Criteria

Pond Structure	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Ponds are essentially watertight with impermeable banks and bottoms with adequate lining and/or compaction being maintained when maintenance occurs.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Drains are managed to avoid any ongoing erosion and discharge of sediment.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Overland flow does not enter ponds.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	



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Pond Structure	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Protect ponds walls from erosion caused by wave setup and aerator/circulation induced scour and erosion.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Pond /Tank Water Quality	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Ponds/tanks are managed to maximise fish health and production AND to ensure discharges are minimised and of acceptable water quality.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Food conversion rates are maximised..	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Aeration/oxygenation of ponds is adequate.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Stocking densities are determined in consideration of available aeration, water exchange requirements and feed quality.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Algal and bacterial floc is managed to avoid disease and maximise water quality of discharge waters.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
Understand intake water quality as in some cases intake waters can have elevated nutrients, particulates and/or salinity.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/>	
	G N H F S		

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Water quality of the ponds and tanks are a major focus of fish husbandry. In terms of environmental sustainability, the critical aspect is the quality of discharge waters and the minimization of energy and food inputs.



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Treatment Ponds	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Where the farm is designed and operated to have an ongoing or regular discharge treatment ponds there are treatment ponds (usual practice is treatment pond area is 50% of production pond area).	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Where macrophytes and other aquatic plants are used for treatment ponds, these are not weeds nor have the potential to become invasive downstream.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Treatment ponds are managed and monitored for their ongoing capacity to cope in relation to biomass and sludge build up. Planning is in place for the potential need for sludge removal and or harvesting of plants.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Best practice is to ensure the beneficial re-use of harvested aquatic plants from treatment ponds (this can range from ornamental use of lilies to producing fertiliser).	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Fish Management

Principle

Farms manage fish stocks to maintain fish health, reduce disease risk and minimise escapes.

Criteria

Harvesting	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Harvesting mechanisms are undertaken to reduce erosion disturbance of sediments (particularly if harvest involves wastewater discharge).	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Harvesting methods ensure no escapes.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
If drain harvesting is used, ensure erosion protection of receiving water courses; ensure pond/tank water quality is acceptable.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
If pond sediments are not disturbed during trap, trawl or net harvesting, turbid waters settle in the pond or settlement pond prior to discharge.	<input type="checkbox"/> <input type="radio"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater



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Escape Prevention	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
There are mechanisms in place to ensure there is no escape of cultured barramundi at any life stage from the farm.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Pond/tank discharge structures have appropriate sized screens, mesh or gravel filtration to avoid escapes.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Pond/tank discharge screens/mesh are regularly maintained.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Pond walls and tanks should be above 1 in 100 year flood levels (mandatory for new farms after 2011).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Best practice involves the use of fish proof strainer dams, the installation and maintenance of gravel filtration on pond discharge structures and chemical treatment of water released from hatcheries.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Disease and Parasites	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Procedures are in place to treat any disease and parasites to avoid release to the natural environment.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Maintain adequate pond/tank water quality to avoid disease.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Ensure stocking densities are not excessive.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Undertake regular monitoring of fish to gauge levels of disease.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Direct injection vaccination is used rather than baths for treatment of disease.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Quarantine affected ponds/tanks, dry and treat (e.g. lime of ponds and sterilisation of tanks) prior to restocking after major disease outbreaks.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Any disease affected stock (including fingerlings and hatchlings) are not sold or released into the wild.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Where statutorily required, disease specimens are collected and appropriate authorities advised.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Malachite green is not used for protozoan control.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Disease and parasites are usually actively managed to maximise farm productivity. The environmental concern is any release of the disease/parasite or control chemicals to the natural environment.



Feed Sustainability

Principle

Farms consider the sustainability aspects of feed used.

Criteria

Aspect	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Feed is used which minimises impacts: <ul style="list-style-type: none"> Content from wild caught fish meal is minimised (and only used where the fish meal is sustainable). Vegetable protein content is maximised. Vegetable oils are maximised over animal sourced oils (including fish oil). 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Use feeds with a low level of phosphorous, low dust/fines and have a high percentage of digestible ingredients.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Feed is stored in a cool dry location (and not stored for too long). (This maximises food conversion rates and minimises losses of solids/nutrients which adversely affect water quality).	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	
Non-locally endemic live feeds are not used.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Guidance: The sources of fish meal and fish oil in feed is a significant sustainability issue. For other marine farmed fish species the environmental certification requirements require that any wild caught component of feed (fish oil/fish meal) must be from an accredited, sustainable fishery. The Marine Stewardship Council provides certification of some fisheries which are used in fish meal/ fish oil sources. Further traceability and chain of custody is a global issue for farmed fish feed.

It is expected that the sources of fish meal and fish oil in feed for Australian aquaculture will be more strongly and sustainably managed in coming years and as such it is proposed that a review of the requirements for certification be made by 2014 with a target of introducing a minimum standard by 2015 (e.g. 50% of fish oil and fish meal inputs to feed are from a certified sustainably managed fishery or are bycatch/by products).

The International Fishmeal and Fish Oil Organization Global Standard for Responsible Supply provides current global guidance on the issue.

The Salmon Aquaculture Dialogue require a Forage Fish Dependency Ratio calculation which involves the percentage of fish meal and percentage of fish oil which is derived from a pelagic fishery (e.g anchoveta). The ratios to be calculated use standard factors and the calculation of a farm fish in – fish out (economic feed conversion ratio). ABFA plan to monitor industry standards in this regard and move towards such calculations as global practices settles on an appropriate methodology and once Australian feed manufacturers can provide input data.



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Genetics	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
<p>Strategies are in place to optimise genetic resources and broodstock to maximise production success and to ensure ongoing genetic diversity.</p> <ul style="list-style-type: none"> Document spawning rates of individuals. Swap broodstock with other operators. Replenish broodstock with other operators. Rotate broodstock. Maintain records of broodstock and progeny distribution. 	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Guidance: Above practices are from the (Queensland) Industry Environmental Code of Best Practice for Freshwater Finfish Aquaculture, ABFA is in the process of establishing a genetics improvement program.

Fingerling Source	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
<p>From 2016, only fingerlings sources from an ABFA certified hatchery are used.</p>	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater





Product Quality

Hygiene Food Safety

Principle

Farms process fish and deliver to market in a manner which meets all food safety requirements.

Criteria

Aspect	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Fish processing facility and procedures meet food safety laws and standards.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> G N H F S	<input type="checkbox"/>	
Ice used is made from sterilised potable water.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> G N H F S	<input type="checkbox"/>	
Plants and equipment coming into contact with fish during harvest and handling between the pond and processing facility (e.g. fish pumps, harvest bins etc.) is corrosion resistant, smooth and easy to clean and disinfect.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Quality/Taint

Principle

Fish is of **high quality**, presents undamaged and is **without "muddy" taint**.

Criteria

Aspect	Applies	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Comment
Pond management aims to reduce geosmin as far as practical.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> G N H F S	<input type="checkbox"/>	
Every harvest is sampled and subject to on site flavour testing for muddy taint by a trained taster using the ABFA approved procedure.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> G N H F S	<input type="checkbox"/>	
There is at least twice annual blind calibration of each taster for the farm to ensure muddy taint will be detected.	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> G N H F S	<input type="checkbox"/>	
Fish with muddy taint is not sold or in any way distributed for human consumption with any reference of the ABFA logo, the certification process or the words "certified, quality or barramundi".	<input type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> G N H F S	<input type="checkbox"/>	

Pond | Tank | Recirculation System | Open System | G Growout | N Nursery | H Hatchery | F Freshwater | S Saltwater

Flavour management is important for market acceptance of farmed barramundi. An off flavour or "muddy taint" is damaging for all producers. To ensure that barramundi sold under the ABFA brand for quality and environmental standards delivers an outstanding eating experience, the standards require that each shipment of barramundi be tested for flavour consistency.



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Twice each year farms accredited under the ABFA brand will benchmark their sensory grading system:

- Each farm will have a phial of geosmin samplers available to define the flavour profile.
- From each pond of fish to be harvested take 2 fish at random and kill in an approved manner. A 50 gm sample of flesh shall be taken from the side of the fish close to the head.
- Testing shall be done in an environment free from odour and distractions and by a staff person designated as a taster.
- The taster shall smell each sample. Each sample of raw flesh shall be graded on a scale of 1 to 5 where 1 is for fish with absolutely no discernable muddy taint and 5 indicates a strong odour that would be rejected by a consumer.
- Each sample shall then be micro-waved separately in a small dish covered with baking paper and again graded on the same scale whilst warm.
- If the average for the 4 tests exceeds a numerical value of 2.5 then the fish do not meet the standards required for ABFA certification and should not be harvested until they meet the necessary standard.

Twice each year the ABFA will advise on arrangements for farms which are part of this program to send samples for independent evaluation and benchmarking. The method is:

- Take samples of fish as set out above. And evaluate and provide a written score.
- Only fish scoring less than 2.5 should be sent for evaluation.
- 500 gm of the remaining uncooked flesh is to be placed in sealed bags, frozen and sent in the approved manner to the laboratory for independent flavour evaluation, accompanied by the approved form.
- Results will be returned comparing the fish to all other fish from other farms in the program. The results provided will be confidential.
- The returned results are to be used to re-establish bench marks.



Risk Assessment

Introduction

This Risk Assessment Proforma is for Barramundi Farms to achieve certification. Farms that have an established Environmental Management System approved and being implemented (or on Integrated Environmental Management System or Site Based Management Plan under Queensland legislation) which lists and evaluates potential environmental risks do have to complete the following proforma risk assessment.

However it is recommended that all farms have such a risk assessment in place.

Environmental and Business Risks

An important aspect of the risk assessment is that usually preparedness substantially reduces the risk. The focus in the proforma is on the risk of environmental harm, however farmers are encouraged to use the process and proforma to address all risks and include mitigation strategies to protect both the environment and reduce business risks.

Definitions

ASPECT: include activities, events and potential impacts, ensure accidental and emergency situations are considered. The table includes some potential aspects which should be considered, however some aspects may not be relevant and in almost all cases more aspects not included in the example list will need to be included.

POTENTIAL IMPACT: describe the potential ecological, social, cultural and economic impacts, only where impacts are adverse. Where ecological harm may occur, note this as POTENTIAL ECOLOGICAL HARM.

RISK MINIMISATION/MITIGATION STRATEGIES: describe what can be done to minimise the risk and if it occurs to mitigate the potential impacts. Note, it is vital to consider the ability to know that the event/impact has occurred, for example if there is no monitoring of a settlement pond discharge, an impact may be occurring long before it can be mitigated. Put simply, risk minimisation is preventing the event, risk mitigation is preventing harm/fixing the harm if the event occurs.

LIKELIHOOD: The likelihood of the risk occurring and the potential impacts occurring after risk minimisation and mitigation should be identified, this should be UNLIKELY, POSSIBLE, LIKELY. To avoid any doubt, this should be considered as likely over a long term (say at least ten years) and must consider accidental and emergency events for which the organisation cannot control the probability of the event.

SEVERITY AND REVERSIBILITY OF IMPACT: The impact severity should be considered as to the level of effect on the ecology, social, cultural or economic environment. A social or cultural impact which causes local short term discomfort but no long term impact is not severe, similarly, a minor release of untreated sewage to a river during a flood event is likely to be assimilated within the aquatic ecology without causing great water quality change and is not severe. Whereas an impact which causes health impacts on local people, or the long term release of partially treated sewage which changes a coral reef structure to algae dominated communities is a severe impact. This last example also is one which is very hard to reverse. An oil spill in an alpine lake would also be almost irreversible. Whereas a release of contaminated storm water to the municipal sewage treatment system is not severe and a reversible impact as it can be treated further downstream. To avoid any doubt, an impact on any natural ecosystem, protected area or wildlife species of conservation concern should be considered severe. Severity should be described as MINOR IMPACT, MODERATE IMPACT, SEVERE IMPACT and also as REVERSIBLE OR NOT REVERSIBLE



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RISK EVALUATION: The overall risk evaluation shall be set out as MINOR RISK, MODERATE RISK AND HIGH RISK. Obviously many factors must be taken into account to determine the overall risk, as a guide any risk which is possible or likely and has a severe and/or irreversible impact should be considered SIGNIFICANT.

RISK ASSESSMENT CONSIDERS STRATEGIES TO MINIMISE RISK: To avoid any doubt, the risk assessment is undertaken on the basis of risk minimisation/mitigation strategies which are implemented by the organisation.





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Aspect	Potential Impact(s)	Risk Minimisation/Mitigation Strategy(ies)	Likelihood	Severity reversibility and of impact	Risk Evaluation
<i>Example only: Fuel spill whilst fuelling small outboard powered boat used for water sampling.</i>	<i>Petrol and oil contamination of nearby mangroves or creek.</i>	<i>Only fuel using hand pumps from drums on the ramp in good weather, in other cases bring outboard fuel tanks to workshop to fill. Have a absorbent pads ready near the ramp for fuel spill clean up. Train all vessel operators and maintenance staff in fuel handling and spill clean up procedures.</i>	<i>Small spills are LIKELY A major spill is UNLIKELY</i>	<i>A small spill is MINOR IMPACT and REVERSIBLE, a major spill is SEVERE IMPACT and NOT REVERSIBLE</i>	<i>MODERATE RISK</i>
Staff Environmental Awareness <i>Risk factors to consider:</i> <ul style="list-style-type: none"> • Number of staff and degree of supervision of staff; • Turnover of staff, especially itinerant staff; • Previous experience of staff; and • Risks of ecological harm from staff actions (e.g. low for farm hand but high for engineer responsible for bulk fuel handling or duty manager)... consider other aspects of risk assessment in evaluating this. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
Cyclone or Monsoon <i>Risk factors to consider:</i> <ul style="list-style-type: none"> • Major flooding, raised groundwater, need to discharge without adequate time in settlement ponds etc. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK



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<p>King Tides</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Local flooding, raised groundwater, intake and or discharge when estuarine creeks turbid. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Drought</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Need to discharge when local water course little flow or turbid/poor water quality. Ability to obtain intake water. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Pump/aerator or power failure</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Management of water not meeting discharge criteria. Disposal of any dead fish. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Disease</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Disposal of any dead fish. Quarantine requirements. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK



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<p>Algal Bloom</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> • Management of discharge water quality. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Freshwater Resources</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> • Source of water supply. • Downstream ecological and community needs for the water. • Impacts during seasonal dry periods and irregular drought conditions. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Groundwater</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> • Abstraction causing low groundwater. • High groundwater . • Impacts during seasonal dry periods and irregular drought conditions. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Stormwater, erosion and siltation</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> • Pollution of storm water by oil, grease, litter and sediment. • Erosion and sediment, and sensitivity of watercourses to siltation. • Erosion being repaired and siltation controls to prevent effects on water courses. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK



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<ul style="list-style-type: none"> Ongoing washdown of external paths, areas etc. and vehicle washing without treatment of storm water. High risks particularly if there is a sensitive aquatic ecosystem downstream (e.g. wetland, mangroves, coral reef, lake etc.). Any form of untreated waste water enters storm water flows. Ongoing erosion with sediment being to watercourses off-site. Storm water is concentrated from a large area into a discharge to a watercourse without erosion protection of the water course.. 					
<p>Local Conservation Issues</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Sensitivity of local ecosystems to impacts from the farm and conservation significance of the natural systems. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Wildlife</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Potential for wildlife disturbance and potential to affect feeding, socialisation or breeding activity. Potential need for removal/control of predators (birds, crocodiles etc.). 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK



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<p>Odor</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Odors from dead fish, pond drainage, sludge, settlement ponds etc. affecting neighbors.. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Noise</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Noise impacts on neighbours. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Wastewater</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Volume and character of wastewater. Level of treatment. Sensitivity of receiving environment. Other pollutant input to the receiving environment. Wastewater from treatment baths, nurseries etc. containing chemicals 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Waste</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> Types of waste generated. Final disposal destination of waste. <p><i>Low Risk</i></p>			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK



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<ul style="list-style-type: none"> • Good recycling, composting and disposal of other waste to a well managed municipal land fill. • Toxic/regulated wastes such as batteries and chemical containers. 				NOT REVERSIBLE <input type="checkbox"/>	
<p>Chemical Storage and Handling</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> • Quantity and toxicity of substances. • Proximity of sensitive ecosystems or people. <p><i>Low Risk</i></p> <ul style="list-style-type: none"> • Small quantities of harmful substances are stored in accordance with instructions. • Bulk quantities of harmful substances are stored in banded, roofed areas etc. • Material safety data sheets are not on-site. • Storage of harmful substance(s) are not in accordance with local regulations, international standards or material safety data sheets. • Spill clean up and containment equipment availability. 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Waste Toxic Substances</p> <p><i>Risk factors to consider:</i></p> <ul style="list-style-type: none"> • Disposal of batteries, waste oil (from machinery and kitchens), sewage treatment sludge's, toxic chemical 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK



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containers etc.				NOT REVERSIBLE <input type="checkbox"/>	
Other - _____ <i>Risk factors considered:</i> • _____ • _____			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
Other - _____ <i>Risk factors considered:</i> • _____ • _____			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
Other - _____ <i>Risk factors considered:</i> • _____ • _____			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
Other - _____ <i>Risk factors considered:</i> • _____ • _____			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK



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<p>Other - _____</p> <p><i>Risk factors considered:</i></p> <ul style="list-style-type: none"> • _____ • _____ 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK
<p>Other - _____</p> <p><i>Risk factors considered:</i></p> <ul style="list-style-type: none"> • _____ • _____ 			<input type="checkbox"/> UNLIKELY <input type="checkbox"/> LIKLEY	<input type="checkbox"/> MINOR IMPACT <input type="checkbox"/> MODERATE IMPACT <input type="checkbox"/> SEVERE IMPACT REVERSIBLE <input type="checkbox"/> NOT REVERSIBLE <input type="checkbox"/>	<input type="checkbox"/> MINOR RISK <input type="checkbox"/> MODERATE RISK <input type="checkbox"/> HIGH RISK





Annual Awards

As a key part of the overall Barramundi Farming Sustainability Program there will be annual awards. The current awards given out are....

Need to insert details from current ABFA awards

From 2012 it is proposed to have three major annual awards:

- Barramundi Farming Ecoefficiency Award
- Barramundi Farming Sustainability Award
- Barramundi Farming Sustainability Certificates of Merit

The purpose of these awards to promote innovation with sustainability and ecoefficiency and the sharing of information between farms.

Farms that have achieved Sustainability Certification are eligible for the awards.

Ecoefficiency Award

This award is to be based on the ecoefficiency benchmarking and should be given to the farm with the best ecoefficiency it is suggested that for 2012 this be for energy, for 2013 this should be for water use and then for future years this should be for the best improvement.

Farms which have lodged their ecoefficiency benchmarking survey shall be automatically eligible. The ABFA Sustainability consultant shall make a recommendation each year which shall be verified by the Certification Panel. Where a farm has not been specifically audited the consultant must interview the farmer and may request records to ensure veracity of the benchmarking results.

NOTE: Farms do not specifically apply for this award, they are automatically assessed when they submit their ecoefficiency benchmarking data. This will add an incentive for farmers to lodge their ecoefficiency benchmarking data in a timely manner.

It is intended that this award is awarded to one farm every year.

A logo (similar to the Certification logo) with the words "Australian Barramundi 20xx Ecoefficiency Award" will be provided and may be used by the farm on its product for two years immediately following the granting of the award. The farmer may use the award on farm and product promotion material and may (at their own cost) provide retailers with small stickers with the logo for consumer packaging. The logo may be in dark solid colour (blue/black etc.) on a plain background.

Barramundi Farming Sustainability Award

For this award, Farms enter with a simple lodgement form outlining the innovative or best sustainability and/or ecoefficiency practices that they wish to nominate for the year. The Certification Panel will act as the award judges and may ask a farm for verification of sustainability outcomes.

Farms must have had a recent audit to ensure the overall sustainability of the farm and to avoid embarrassment of ABFA and bring the integrity of the awards system and/or the Sustainability Certification program into disrepute.



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NOTE: Farmers lodge a nomination by early May for assessment and announcement of a winner for the annual conference. In addition the ABFA Sustainability Auditor may nominate a farm for entry for the award as a result of an on—site audit.

The key criteria is that:

For the 20xx year the XXX farm exhibited innovative best practice sustainability (and/or) ecoefficiency in the framing of barramundi which provides a model for the Barramundi Farming Industry in Australia.

The Farm must also have be certified, have been recently audited and provide adequate evidence of their claims of best practice and its success in achieving ecological sustainability and/or ecoefficiency.

An award does not need to be made every year, and should the Certification Panel decide that no applicant or nominee meets the key criteria no award should be issued. Similarly, if in any one year two or more farms have exceptional applications/nominations the Certification Panel may chose to award two (or more) Sustainability Awards in any one year, however this should be only in exceptional circumstances.

The Certification Panel must make a specific citation for each award and recommend this to the ABFA board for endorsement prior to issuing the award. The chair of the Certification Panel shall communicate directly with non-affected board members in the event that a board member is a potential recipient or in any other way has an overt conflict of interest in the recommended award.

A logo (similar to the Certification logo) with the words “Australian Barramundi 20xx Sustainability Award” will be provided and may be used by the farm on its product the for two years immediately following the granting of the award. The farmer may use the award on farm and product promotion material and may (at their own cost) provide retailers with small stickers with the logo for consumer packaging. The logo may be in any colour including gold embossed where appropriate.

Certificates of Merit

The Certification Panel may issue certificates of merit to Farms which make application for or are nominated the sustainability award and/or from the outcomes of the Ecoefficiency award process. The criteria should be as above with a lower level threshold and issues for encouragement/recognition rather than full attainment.

Farmers may also nominate key staff for their role in suggesting or implementing sustainability and/or ecoefficiency initiatives. In exceptional circumstances the ABFA Auditor may make a personal nomination of a farm employee.

The Certification Panel will consider these and may interview the nominee (however it is not expected that the auditor does this annually).

There are no limits to the number of certificates of merit that may be issued in any one year.

The Certification Panel must make a specific citation to go with each award outlining what sustainability or ecoefficiency initiative the certificate of merit has been awarded for.

No logo or seal is applicable and farms may only list in promotional material that the farm was awarded a certificate of merit and the citation for the award.



Appendix One

Eco-efficiency Survey





Appendix Two

Example Policy

Example Barramundi Farm Sustainability Policy

Example Farm is a Barramundi Farm located 20km east of Smalltown, on the western bank of the Flowsalot River. There are mangroves one kilometre downstream and a melaleuca forest flanks our northern boundary. The Farm has 24 ponds covering 12 hectares.

Example Farm is committed to ecological sustainability we attempt to understand potential impacts and minimise the risks of any impacts.

Example farm has held an environmental permit for twelve years and we are committed to compliance with environmental, planning, safety and hygiene permits, licences and regulations. This Policy is one part of our Environmental Management Plan.

We are proud to have achieved Sustainable Barramundi Farming Certification and willingly provide our Ecoefficiency Benchmarking data and Certification Annual Returns and reports.

Example Farm is striving to improve our ecoefficiency, to reduce energy and water consumption and minimise waste in accordance with best practice, whilst maximising production effectiveness and ensuring we maintain fish health and farm productivity.

Example Farm purchases eco-friendly and sustainable products where possible. Further, we purchase locally as far as practicable.

Example Farm has a "good neighbour" approach, we recognise talk to and understand the aspirations and concerns of our neighbours and avoid odour, dust and noise impacts as far as possible.

Wherever we can we look for ways for continual improvement, including adopting or trialling emerging best practices.

Signed

XXXX

Director and Owner

Smalltown Barra

Xx Month 2011



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