

Health protocol for the importation and movement of live barramundi

Aquaculture Protocol FAMPR002

Version 4

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Introduction

Barramundi (*Lates calcarifer*) farming is significant sector of the aquaculture industry in Queensland. At times farmers may seek to source seedstock from outside Queensland. Also farmers in the restricted drainage divisions need to follow movement control as listed for movement of seedstock from non-restricted areas anywhere in Australia including Queensland. This health protocol aims to minimise the risk of the introduction of diseases of concern into Queensland waters and is based on good biosecurity measures and farm management practices that are beneficial to the industry.

Diseases of concern for barramundi

The conditions for the importation or movement of barramundi require the sampling of fish to exclude the presence of any diseases of concern for barramundi in Queensland. Exotic diseases of concern are listed on the Queensland Declared Disease List.

Diseases and disease agents of concern for barramundi on Queensland's Declared Disease List are:

- Enteric redmouth disease (*Yersinia ruckeri* Hagerman strain)
- Enteric septicaemia of catfish (*Edwardsiella ictaluri*)
- Epizootic haematopoietic necrosis virus (EHN)
- Infectious pancreatic necrosis virus (IPN)
- Red sea bream iridoviral disease
- Spring viraemia of carp virus (SVC)

Diseases and disease agents of concern that are reportable nationally (and to the OIE) but not on Queensland's Declared Disease List are:

- Viral encephalopathy and retinopathy (VER)*
- Epizootic ulcerative syndrome (EUS)

These diseases, of national and international importance, are not listed on the Queensland Declared Disease List because they are known to occur in Queensland. Listing of an endemic disease or agent has implications under the *Fisheries Act 1994*.

*Movement of barramundi into restricted areas must certify freedom from viral encephalopathy and retinopathy (VER).

Other diseases and disease agents of potential concern are listed in Appendix 1.

Conditions for movement into non-restricted areas

Non-restricted areas or drainage divisions include the Northeast Coast and Gulf of Carpentaria (see Figure 1 in Appendix 2).

Movement into unrestricted areas is controlled by these development approval (DA) conditions.

Application to translocate

The species approved under this authority must not be brought into Queensland for rearing unless an "Application to allow the Translocation of Live Aquatic Animals into and within Queensland" (form FDU1398) and Pathology Report has been completed and the Manager, Aquaculture,

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Department of Agriculture, Fisheries and Forestry (DAFF), has provided written acknowledgement and approval of the "Details of translocation form" and the Pathology Report.

The "Application to allow the Translocation of Live Aquatic Animals into and within Queensland form" and a signed copy of the Health Certificate or Pathology Report (as detailed below) must be given to the Manager, Aquaculture, DAFF, a minimum of three (3) working days prior to all shipments into Queensland. It is a requirement that the pathology report/health certificate is dated no more than 14 days before shipment date.

Health certification

The health certificate or pathology report issued by the exporting state or territory's fisheries or veterinary authority certifying the animal's health must include a statement that the specimens originate from:

- a. a hatchery, farm, aquaculture premises or region which is recognised as free from infection by the diseases on the Queensland Declared Disease List based on the requirements listed in the OIE Manual of Diagnostic Tests for Aquatic Animals, current edition (Fourth Edition 2003 or later) for recognition as free from infection; or
- b. a hatchery, farm, aquaculture premises or region in which an appropriate targeted surveillance scheme over two years has been undertaken under the supervision of State or Territory Fisheries or Veterinary authorities and where the requirements for recognition as free from infection by diseases of concern for that species on the OIE Manual of Diagnostic Tests for Aquatic Animals, current edition (Fourth Edition 2003, or later) have been met; or
- c. a single batch of gametes, larvae, fry, post-larvae, spat or early juvenile isolated from open waters, which has been tested using a suitable technique to provide evidence that the batch is free from infection by diseases of concern* from the Queensland Declared Disease List for that species.

For c) the importation of **barramundi fry or older ages, a suitable technique** would involve the histological examination, by a recognised laboratory (a laboratory which has a formal quality management system accreditation for aquatic animal pathology), of 150 fish per batch when the fish are older than 21 days and before movement into Queensland; and

For c) the importation of **barramundi eggs or larvae**, it would not be practical (due to the size of the animals and the time needed for laboratory examinations) to require histological or other laboratory examinations. In this situation an '**appropriate procedure**' could be adopted. **This situation will be assessed individually case by case in consultation with veterinary officers in both jurisdictions. It will not be applicable for barramundi movement into restricted areas.**

In this situation a health certificate or a pathology report prior to shipment is not required, and the applicant is required to address the 'appropriate procedure' for the importation of barramundi eggs and larvae.

An '**appropriate procedure**' for eggs and larvae would include:

- a. A statement signed by the exporting hatchery manager/owner that the eggs or larvae were spawned by broodstock that were clinically normal at that time and there has been no reports in the exporting hatchery of diseases of concern from the Queensland Declared Disease List for barramundi in the previous 90 days prior to shipment; and

After arrival in Queensland;

- b. The grower must submit a sample of 150 fingerlings per batch at 21 to 42 days of age for health testing to the appropriate laboratory (see Contacts); and

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- c. After a 48 hour period of residence in Queensland to allow post-transport mortalities to stabilize, the grower must notify the district officer of the nearest Queensland Boating and Fisheries Patrol immediately if mortalities of greater than 5% of stock in a single tank over a twenty-four (24) hour period are observed; and
- d. Maintain a record of fish mortalities for a period of one (7) years and make those records available to DAFF upon request.

Post arrival mortality

After arrival, any unusual clinical signs or mortalities in the stock must be reported immediately to the district officer of the nearest Queensland Boating and Fisheries Patrol office. If directed by a DAFF officer, the specimens must be forwarded to a veterinary laboratory as directed by the officer.

Sampling for disease surveillance

DAFF officers must be provided, upon request, with samples of aquacultured species from the approved area and / or the water in which they are cultured for the purposes of health testing and or water quality testing.

Conditions of movement into restricted areas

Restricted areas or drainage divisions encompass Lake Eyre, Bulloo-Bancannia and Murray-Darling (see Figure in Appendix 2).

Movement from hatcheries in New South Wales (NSW), South Australia and Northern Territory, and also unrestricted areas of Queensland, into restricted areas [or drainage divisions] is controlled by the same DA conditions as those that apply to movement into non-restricted areas [or drainage divisions] – see previous requirements.

IN ADDITION to the non-restricted conditions, there is this additional condition in regard to health.

This Development Approval authorises the possession and aquaculture of barramundi fingerlings, only from an approved hatchery facility, which have tested negative for nodavirus (the causative agent of viral encephalopathy and retinopathy (VER)) at 21 and 42 days old. The entity or entities conducting aquaculture must not transport to the approved area, or possess, Barramundi eggs, larvae or fingerlings which are less than 42 days old. Therefore the grower must:

- a. obtain, from a recognised laboratory (a laboratory which has a formal quality management system accreditation for aquatic animal pathology), a pathology report dated no more than 7 days before shipment date which indicates the absence of lesions in each and every batch of barramundi fry/fingerlings, with 150 individuals examined at 21 days of age and another 150 individuals examined at 42 days of age, prior to transporting that batch of barramundi fingerlings to the approved area; The pathology report must indicate the absence of lesions and will demonstrate freedom from viral encephalopathy and retinopathy; and
- b. complete and accurate records must be maintained of all movements of fish brought onto and taken from the approved area. Records must include:
 - the sources of stock obtained;
 - the age of specimens;
 - the numbers of specimens;
 - a signed copy of the Pathology report certifying animal health for all batches of Barramundi transported to the approved area;
 - the date obtained;
 - mortality rates;

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- any unusual characteristics or behaviour;
- the batch number; and
- the destination of stock once removed from the aquaculture facility.

Guidelines for movement of barramundi from Queensland to other parts of Australia

This section provides guidelines for export of barramundi to other states or territories and is for the information of industry, testing laboratories and field extension officers. It is information that has been supplied to DAFF by the other jurisdictions and is only accurate as of the time that the information was delivered (last updated July 2005). Farmers or hatchery operators should contact the state or territory to obtain the most up to date advice.

Note: Tasmania does not generally permit the movement of live aquatic animals into the state for aquaculture.

Barramundi into NSW

(see "NSW Barramundi farming policy – October 2002")

- No barramundi eggs, larvae or fingerlings less than 42 days of age shall be imported into NSW.
- All barramundi fingerlings to be imported into NSW must conform to the "Protocol for the Health Certification of Barramundi Fingerling Prior to Entry into NSW". Barramundi fingerlings may be either hatchery or pond reared.
- A copy of the certification of clearance of VER (viral encephalopathy and retinopathy) must accompany shipments of fingerlings into NSW and be issued from a recognised laboratory under the terms of the disease testing protocol.
- The sample for each rearing tank / pond will be 300 Central Nervous System (CNS) sections plus retina sections of fish aged between 21 and 42 days. The CNS plus retina sections will be subject to a histopathological examination. The result from the histopathological examination must be negative for VER (nodavirus)

Barramundi into South Australia

(PIRSA translocation policy)

- Each batch of juvenile barramundi must be batch tested to OIE standards for VER at most 7 days prior to being translocated to SA. Details of this certification must be sent to Primary Industries and Regions South Australia (PIRSA) Aquaculture no less two (2) days prior to the animals being moved.
- Juvenile barramundi must be held and transported in water from a supply separate to that used to hold broodstock, unless all broodstock have been tested and shown to be negative for BNNV.
- Barramundi suppliers are required to sign a declaration that they have adhered to the required protocol. The declaration must accompany the shipment, be retained by the recipient for 12 months and should clearly state:
 - the species of fish translocated and that this is the only species contained in the shipment;
 - the age of the fish in question (days post hatch);
 - a report from the competent authority in the state of origin indicating that the barramundi were healthy, showed no sign of clinical disease or pest, and indicating when the last outbreak of notifiable disease in the area occurred; and

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- that the fish were reared in accordance with this policy.
- d. Animals to be translocated have been clinically inspected and determined to be free of clinical signs of pest or disease by a competent veterinary officer.
- e. No barramundi eggs, larvae or fingerlings less than 42 days of age shall be released from the hatchery in South Australia.

Alternative measures that provide an equivalent level of risk management may be considered by PIRSA on a case-by-case basis. Such submissions should include all available supporting scientific data.

Barramundi into Northern Territory

- a. One hundred and fifty fish per batch shall be tested in Queensland for health by histopathology.
- b. Streptococcus iniae tested negative by culture from 150 fish per batch tested in pools of 5 brain samples.
- c. Nodavirus negative by PCR from 150 fish per batch tested in pools of 5 brains or heads.
- d. No size or age restrictions.

Barramundi and other freshwater finfish into Western Australia

- a. A sample of 150 fish per batch shall be tested in Queensland for health and freedom from diseases on the Australian National List of Reportable Diseases of Aquatic Animals and Streptococcus iniae by histopathology.
- b. If the brain is not featured in the histology then microbiological culture of fresh fish is required to exclude Streptococcus iniae.
- c. Batches of fish that cannot be declared free from VER, notifiable diseases or significant protozoan or metazoan infections will not be permitted to be imported into the state.
- d. If testing proves negative, a health certificate can be issued. The certification is specific for the particular batch of fish tested from the specified hatchery or farm and remains current for two weeks. Should the certification expire prior to the fish being imported, the fish will be required to be retested.

Barramundi and other freshwater finfish into Victoria

- a. A histopathology of fingerlings (n = 150) should be carried out by a competent fish pathologist prior to the shipment, with no evidence of notifiable diseases.
- b. Fingerlings should be tested between 21 – 42 days old.
- c. Only barramundi fingerlings older than 42 days will be permitted to be transported to Victoria.
- d. No barramundi eggs or larvae should be transported to Victoria.
- e. All fingerlings will be transported in appropriate medium and containers that are free from diseases, parasites, chemicals and associated species.

Relevant legislation

Refer to the Queensland legislation website for the most current version www.legislation.qld.gov.au

Condition of approval

Fisheries Act 1994

Section 79A 'Contravening a condition of an authority'

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Disease

Fisheries Act 1994

Part 5, Section 100 'Notice to be given about diseased fisheries resources or habitat'

Part 5, Section 104 'Offence to communicate disease to live fisheries resources or fish habitat'

Part 5, Section 105 'Offence to sell diseased fisheries resources and products'

Part 5, Section 106 'Offence to leave diseased fisheries resources and products in a place'

Part 5, Section 107 'Offence to bring diseased fisheries resources and products into Queensland'

Contacts

Submitting samples

Contact the Duty Pathologist before sending samples.

Submit **routine aquatic animal samples** for testing to:

Biosecurity Sciences Laboratory

Health and Food Sciences Precinct

Specimen receipt (Loading Dock 12)

39 Kessels Road, Coopers Plains Qld 4108

Phone: 07 3276 6062 (Aquatic Pathologist – submission enquiries)

Fax: 07 3216 6620

In **northern Queensland**, for complex cases or where input is required to prepare samples, contact the Aquatic Veterinary Officer in Townsville **before** sending samples:

Tropical and Aquatic Animal Health Laboratory

Department of Agriculture, Fisheries and Forestry

18 Darter Street, Oonoonba Qld 4810

Phone: 07 4760 1592 or 07 4760 1510 (Aquatic Veterinary Officer – submission enquiries)

Fax: 07 4778 4307

If you need further assistance, please contact the Customer Service Centre on 13 25 23.

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References

Office International Des Epizooties (OIE), Paris.

- Aquatic Animal Health Code (2007)

http://www.oie.int/eng/normes/fcode/en_sommaire.htm

Anderson IG and Norton JH (1991) Diseases of barramundi in aquaculture. *Austasia Aquaculture* 5:21-23

Viral encephalopathy and retinopathy

Munday BL, Langdon JS, Hyatt A and Humphrey JD (1992). Mass mortality associated with a viral-induced vacuolating encephalopathy and retinopathy of larval and juvenile barramundi, *Lates calcarifer* Bloch. *Aquaculture* 103:197- 211.

Munday BL and Nakai T (1997). Special topic review: Nodaviruses as pathogens in larval and juvenile marine finfish. *World Journal of Microbiology and Biotechnology* 13:375-381

Munday BL (2003) Viral encephalopathy and retinopathy – disease strategy manual. Fisheries Research and Development Corporation (FRDC 2002/643) ISBN 0646428896

Anderson I G and Moody N (2004) The effect of barramundi nodavirus on important freshwater fishes. Fisheries Research and Development Corporation Final Report (FRDC 1999/205). ISBN 0 7345 0295 8

Streptococcosis

Bromage ES and Owens L (2002) Infection of barramundi *Lates calcarifer* with *Streptococcus iniae*: effects of different routes of exposure. *Diseases of Aquatic Organisms* 52:199-205

Bromage ES, Thomas A and Owens L (1999) *Streptococcus iniae*, a bacterial infection in barramundi *Lates calcarifer*. *Diseases of Aquatic Organisms* 36:177-181

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Appendix 1 – Other diseases of concern

Viral

- Lymphocystis (lymphocystis virus)

Bacterial

- Bacterial haemorrhagic septicaemia (virulent strains of *Aeromonas* spp.)
- Vibriosis (virulent strains of *Vibrio* spp.)
- Integumentary bacteriosis (virulent strains of *Aeromonas* spp. and *Vibrio* spp.)
- Streptococcosis (*Streptococcus iniae*)
- Bacterial peritonitis (various bacterial species)
- Mycobacteriosis (*Mycobacterium* spp.)
- Columnaris disease (*Flexibacter/Flavobacterium* spp.)

Fungal

- Integumentary mycosis (virulent *Saprolegnia* spp. and *Achlya* spp.)

Parasite

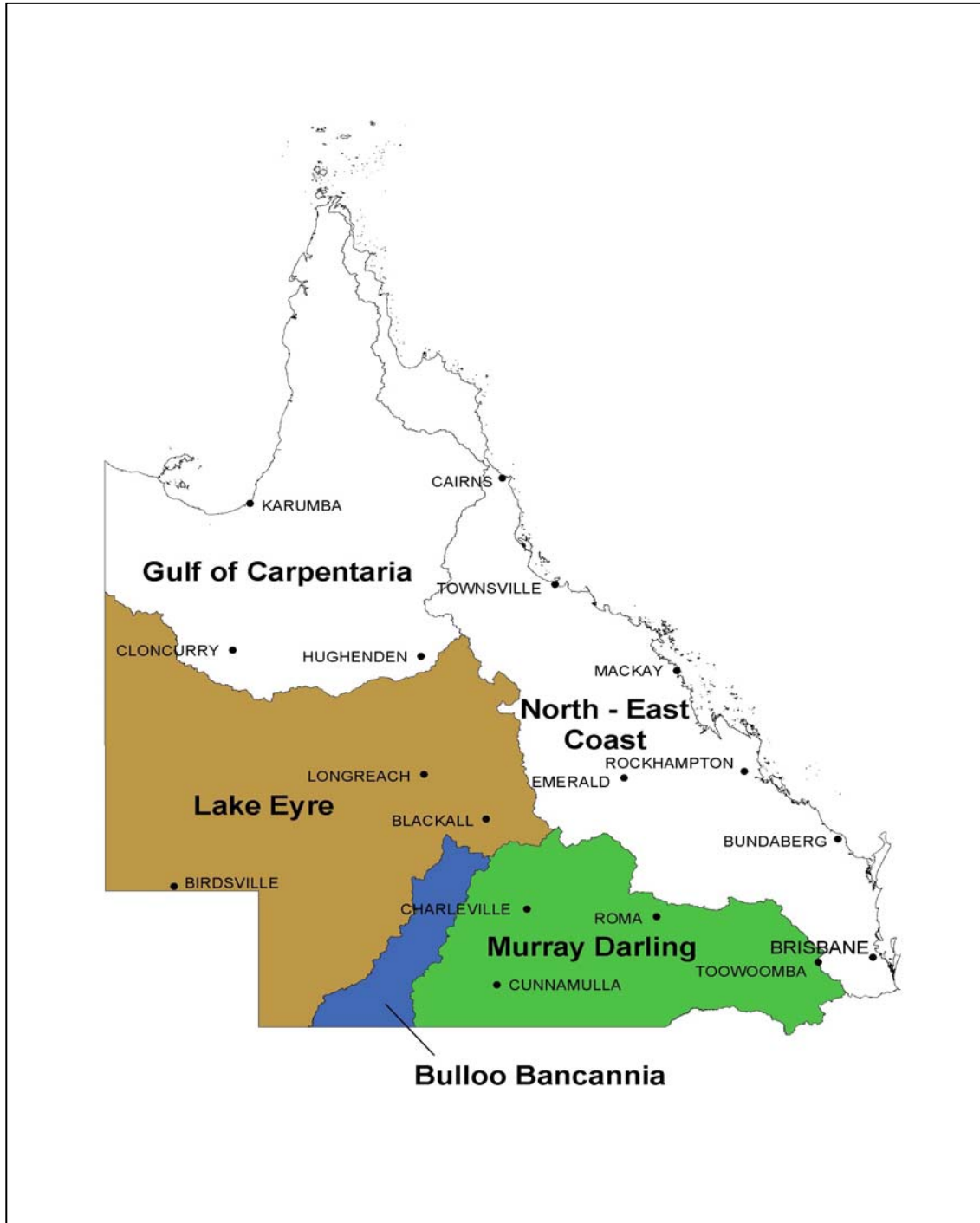
- Skin fluke (*Neobenedinia melleni*)

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Appendix 2 – Drainage divisions

Figure 1: The Drainage Divisions of Queensland, showing the Murray-Darling, Lake Eyre and Bulloo-Bancannia restricted divisions

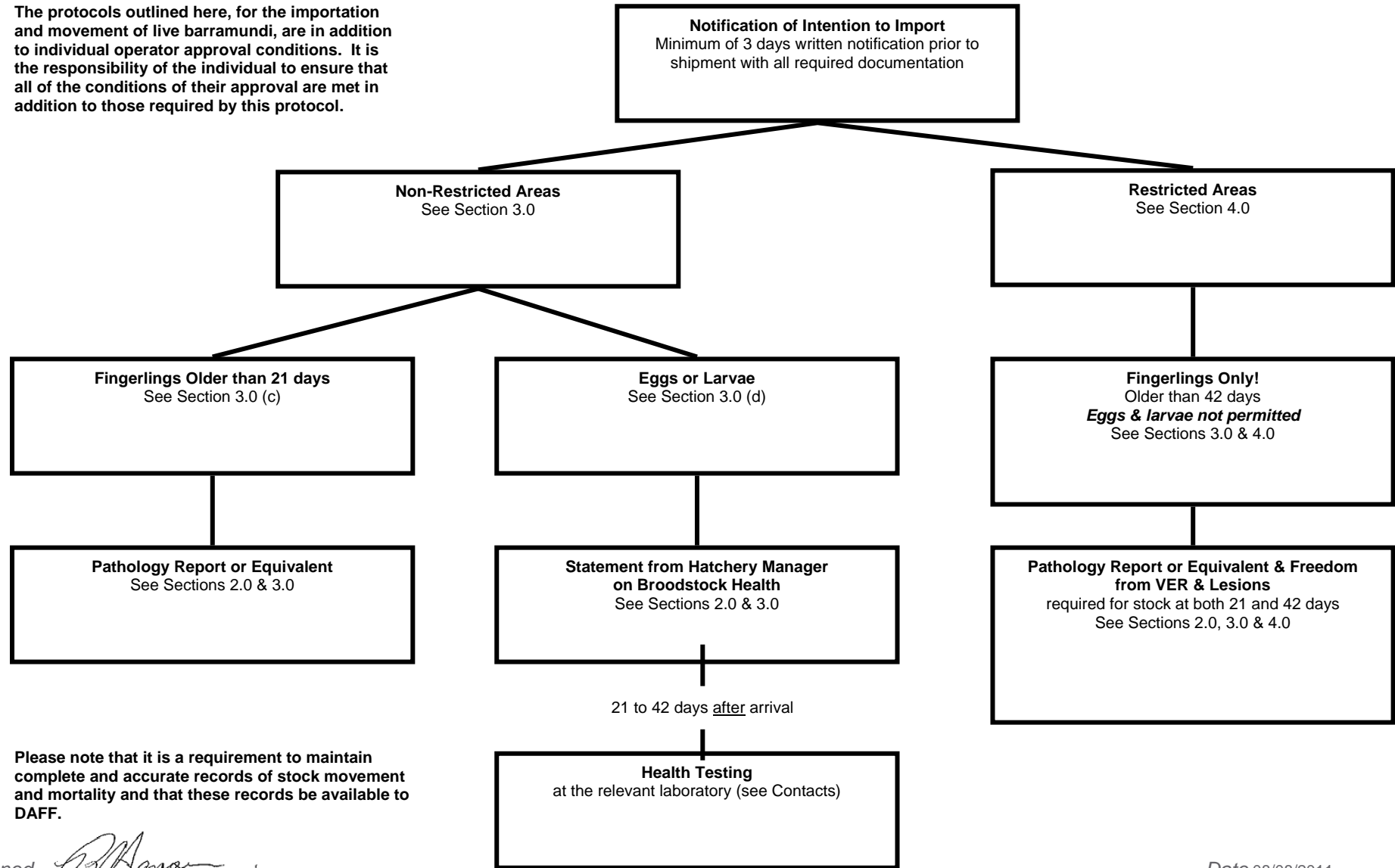


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Appendix 3 - Health requirements for the movement of live barramundi

The protocols outlined here, for the importation and movement of live barramundi, are in addition to individual operator approval conditions. It is the responsibility of the individual to ensure that all of the conditions of their approval are met in addition to those required by this protocol.



Please note that it is a requirement to maintain complete and accurate records of stock movement and mortality and that these records be available to DAFF.

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