

RSPCA APPROVED FARMING SCHEME STANDARDS

# FARMED ATLANTIC SALMON

JANUARY 2019



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These Standards are partly based on the RSPCA welfare standards for farmed Atlantic salmon (October 2012 and September 2015 versions) which were developed, reviewed and updated by RSPCA UK over the period of at least a decade. RSPCA Australia gratefully acknowledges their significant contribution to the development of these Standards.

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# OVERVIEW

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## Introduction

The RSPCA established the Approved Farming Scheme as part of its efforts to improve the lives of Australia's farmed animals. The RSPCA Approved Farming Scheme is a not-for-profit program that works by:

- establishing animal welfare standards that go beyond regulatory requirements
- enabling differentiation and marketing of products from RSPCA Approved farms
- offering consumers a higher animal welfare alternative.

The *RSPCA Approved Farming Scheme Standards – Farmed Atlantic Salmon* (from here on referred to as “the Standards”) outline production practices for the freshwater and marine stages of Atlantic salmon farming. The Standards aim to meet the fish's behavioural and physiological needs and are designed to assist the industry to continually improve and demonstrate good animal welfare outcomes.

These Standards take into consideration RSPCA Australia policy, available scientific research, current legislation applied in Australia, veterinary, technical and producer advice, and current industry good practice.

RSPCA policy on fish and aquatic invertebrates states that the available scientific evidence demonstrates that fish are sentient animals capable of experiencing pain and suffering. Fish must therefore be treated humanely and practices that have the potential to cause pain, injury or suffering avoided. It is essential that persons responsible for managing farmed fish ensure that fish welfare is an integral part of every aspect of production every day.

## Principles underpinning the RSPCA Approved Farming Scheme Standards

The Standards are underpinned by the principles of the ‘Five Freedoms’:

- freedom from hunger and thirst: by ready access to fresh water and a diet to maintain full health and vigour
- freedom from discomfort: by providing an appropriate environment including shelter and a comfortable resting area
- freedom from pain, injury or disease: by prevention, rapid diagnosis and treatment
- freedom to express normal behaviour: by providing sufficient space, proper facilities and company of the animal's own kind
- freedom from fear and distress: by ensuring conditions and treatment which avoid suffering.

Covering both behavioural and physiological needs, together, these ‘freedoms’ provide a comprehensive framework for the assessment of fish welfare and require that those responsible for the care of farmed Atlantic salmon provide:

- caring and responsible planning and management
- skilled, knowledgeable and conscientious stockpersonship
- appropriate environmental management and design
- considerate handling and transport
- humane slaughter.

## Eligibility

These Standards apply to farmed Atlantic salmon kept in eligible farming systems in Australia.

Eligible farming systems under the Scheme include the freshwater and marine stages of farmed Atlantic salmon production where the provisions of these Standards are met.

Products that are eligible for approval under the RSPCA Approved Farming Scheme must be derived from farmed Atlantic salmon grown in systems which meet the provisions of these Standards. Eligible systems may operate in parallel with non-eligible systems; however, appropriate separation and traceability arrangements must be in place to ensure that salmon associated with the Scheme is clearly identified.

Licensees are responsible for ensuring that the farming system, in addition to meeting the Standards, meets the labelling (production descriptor) requirements of the industry and/or retailer (whichever is appropriate) and all relevant legislative labelling requirements.

RSPCA Australia has discretion to determine the suitability or eligibility of the farming system as applicable within the context of the Scheme.

## Application

The documentation that supports the RSPCA Approved Farming Scheme consists of:

- *Operations Manual* – details the operation of the Scheme for both Approved Producers and Licensees, including the application process and the Assessment procedures
- *Standards* (specific to each species) – provide the requirements for the rearing, handling, transport and/or slaughter of the species
- *Traceability policy* – outlining chain of custody requirements for the Scheme
- *Species-specific information notes* – providing information about a range of aspects relating to species-specific standards and to the production process generally.

## Requirements of the RSPCA Approved Farming Scheme

It is a requirement of the Scheme that:

1. The *RSPCA Approved Farming Scheme Standards – Farmed Atlantic Salmon* are complied with.
2. The requirements in the relevant state or territory legislation applicable to the farming enterprise (freshwater and marine stages) are complied with, including but not limited to animal welfare, animal health, water and land use, environmental impact management and monitoring, transportation, processing, biosecurity, food safety and product labelling.

RSPCA Australia has discretion to request proof of compliance with regulatory requirements through the provision of documentation from the relevant local council, state/territory government, quality assurance program or other appropriate body.

3. The following are completed and subsequently reviewed on an annual basis and made available to RSPCA Australia and to the RSPCA Australia Assessor:
  - Animal Care Statement – specifying general management and standard operating procedures
  - Veterinary Health Plan – specifying fish health management procedures.

Existing quality assurance manuals for other programs or accreditation schemes and/or existing standard operating procedures, and records to support production activities may be utilised to meet the requirements of these Standards, provided the specific provisions in these Standards are demonstrated. Equivalence is determined by RSPCA Australia.

4. The enterprise maintains participation in and demonstrates compliance with a third-party audited certification scheme that promotes best environmental practice.

RSPCA Australia has discretion to determine the suitability of the certification scheme and request proof of compliance with the requirements of the scheme through the provision of relevant documentation.

5. Each enterprise nominate a designated person (or persons) who has:
  - responsibility for the operation of the farming enterprise
  - responsibility for overseeing the management and application of the requirements of the Scheme.

The owner of the farmed Atlantic salmon raised under the RSPCA Approved Farming Scheme has, at all times, the final responsibility for ensuring the welfare of the fish and ongoing compliance with these Standards.



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# THE STANDARDS

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## 1 Management procedures

### Training and competency

- 1.01 Persons responsible for the management and/or handling of fish<sup>1</sup> must be appropriately trained and competent in their required tasks, including:
  - a) handling of fish
  - b) observation of fish
  - c) maintaining fish environment
  - d) identification of normal and abnormal fish behaviour
  - e) fish care and treatment of injury, disease or distress
  - f) euthanasia of fish.
- 1.02 Staff induction/training programs and standard operating procedures relevant to each site<sup>2</sup> must include the requirements of these Standards.
- 1.03 Records of staff training must be maintained and be available at the time of an assessment.
- 1.04 Company owned and/or contractor sites must have internal assessment systems in place to ensure on-going compliance with the RSPCA Standards.
- 1.05 Staff must be available to respond in a timely manner to problems that arise.

### Animal Care Statement

- 1.06 An Animal Care Statement must be drawn up and complied with.
- 1.07 The Animal Care Statement must specify general management and standard operating procedures as relevant to the freshwater and marine stages, including, but not limited to:
  - maintaining stocking density
  - fish observation
  - site maintenance
  - cleaning of tanks, pens and equipment
  - feeding
  - water quality management
  - lighting program
  - incubation
  - spawning and stripping
  - hatching

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<sup>1</sup> Fish, as defined in these Standards, generally refers to the population of farmed Atlantic salmon managed to the specifications of these Standards. In some cases, the term is also used to refer to the treatment of an individual fish.

<sup>2</sup> A site, as defined in these Standards, is a location where production activities relating to these Standards take place and may include hatcheries, slaughter plants, marine farming lease areas or other relevant locations.

- smoltification monitoring
- removal and disposal of dead fish
- removal of non-target fish and other species
- general fish handling
- crowding
- grading
- fish transport
- slaughter
- procedures for managing major reportable events.

1.08 The current Animal Care Statement must be provided to RSPCA Australia and be available at the time of an assessment.

1.09 The Animal Care Statement must be reviewed on an annual basis.

### **Fish observation**

1.10 Fish must be observed at least daily to ensure that their appearance and behaviour are normal as determined by:

- a) absence of oxygen deprivation
- b) appetite
- c) absence of injury, deformation or disease
- d) ability to swim
- e) control of body position
- f) schooling behaviour
- g) low aggression
- h) absence of dorsal skin colour changes from grey/black to blue/green.

1.11 Date and time of fish appearance and behaviour checks, notes of any problems identified (including the absence of normal behaviour) and action taken must be recorded.

1.12 Fish appearance and behaviour checks must be increased during periods of adverse environmental conditions and/or other welfare/health concerns.

1.13 Fish that have been identified as diseased or injured must be treated or euthanased promptly where accessible.

1.14 Dead and moribund fish must be removed:

- a) daily in the fresh water phase of production
- b) at least every 3 days in the marine phase of production.

1.15 Dead fish must be disposed of in a safe and hygienic manner.

1.16 The cause of death of fish must be classified using the categories specified in the Veterinary Health Plan (see Section 2).

- 1.17 Where the cause of ill health or disease and the appropriate treatment is unable to be identified, veterinary advice must be sought and followed accordingly.
- 1.18 Any major reportable event<sup>3</sup> which impacts fish health and welfare adversely must be reported to RSPCA Australia.

## Records

- 1.19 The following records must be maintained for each year class:
  - a) details of origin of stock
  - b) number of eggs laid down to hatch
  - c) number of fertilised eggs disposed of
  - d) number of smolts transferred to sea
  - e) numbers and weights of fish in each tank/pen
  - f) stocking densities in each tank/pen
  - g) age and weight at which fish transferred to sea
  - h) age and weight slaughtered
  - i) health and mortality records (see Section 2)
  - j) details of fish observation checks
  - k) facility and equipment checks and maintenance (see Section 3)
  - l) equipment calibration records
  - m) wildlife interactions (see Section 7)
  - n) periods of fasting (see Section 4)
  - o) water quality parameters as appropriate to the system (see Section 5 and 6)
  - p) smoltification monitoring (see Section 6)
  - q) crowding and grading records (see Section 8)
  - r) details of fish movements (see Section 9)
  - s) slaughter records (see Section 10)
  - t) fish injury and damage records (see Section 10).
- 1.20 The following production records must be maintained for each year class:
  - a) total fish production (in kg and in fish numbers)
  - b) total number of fish supplied to Licensee<sup>4</sup> (in kg and in fish numbers).
- 1.21 Current year class records, as well as records since the previous assessment, must be available on site at the time of an assessment and provided upon request to RSPCA Australia.

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<sup>3</sup> A **major reportable event**, as defined in these Standards, includes, but is not restricted to sustained above-trend mortality rate(s) or unusual/unexpected incidences of high mortality, injury or disease resulting from non-endemic and/or exotic disease outbreaks, natural events (e.g. jellyfish or algal blooms), predator incursions, infrastructure or equipment failure, poor water quality, feed supply and/or formulation issues, transportation or fish handling.

<sup>4</sup> A **Licensee**, as defined in these Standards, has entered into a Trademark Licence Agreement with RSPCA Australia and is permitted to use the RSPCA Approved Farming Scheme logo on product sourced from RSPCA Approved farms.

## 2 Health

### Veterinary Health Plan

- 2.01 A Veterinary Health Plan must be drawn up and complied with.
- 2.02 The Veterinary Health Plan must specify fish health management and monitoring procedures and, where relevant, management targets for freshwater and marine stages, including but not limited to:
- a) biosecurity
  - b) routine health monitoring procedure
  - c) broodstock selection, management and identification
  - d) use of veterinary medicines
  - e) anaesthesia and anaesthesia reversal
  - f) vaccination schedule and procedure, and vaccine-related abdominal adhesions
  - g) lighting and photoperiod manipulation
  - h) euthanasia (including emergency mass euthanasia)
  - i) physical injury and damage
  - j) disease (including amoebic gill disease scoring method and notifiable diseases)
  - k) parasites
  - l) mortalities and classification of cause of death
  - m) pest control procedures
  - n) R&D programs targeting health and fish welfare.
- 2.03 Routine health monitoring by suitably trained personnel must be conducted in addition to daily observations of fish health and welfare made by husbandry staff.
- 2.04 The current Veterinary Health Plan must be provided to RSPCA Australia and be available at the time of an assessment.
- 2.05 The Veterinary Health Plan must be reviewed on an annual basis and authorised by the designated veterinarian.

### Health records

- 2.06 Health records must be kept for each year class.
- 2.07 Health records must contain details of the following:
- a) vaccinations and vaccine batch numbers
  - b) other treatments or medicines administered
  - c) diagnosed clinical diseases
  - d) physical damage
  - e) mortalities, separated into 'deaths' and 'culls' noting the main reason for cause of death or culling (includes known escapes and unexplained losses).

### Medicines

- 2.08 Antibiotics must only be administered for therapeutic purposes under veterinary advice. Prophylactic use of antibiotics is not permitted.

### Vaccination

- 2.09 The Veterinary Health Plan must incorporate a vaccination program to protect fish from diseases for which an effective vaccine is available and which may represent a risk to the fish.

### Amoebic gill disease

- 2.10 An amoebic gill disease bathing plan must be in place as part of the Veterinary Health Plan.
- 2.11 Fish must be routinely monitored for signs of amoebic gill disease using a scoring method that determines the severity of the condition based on visible lesions on the gill surface.
- 2.12 Date of amoebic gill disease checks, notes of any problems identified and action taken must be recorded.
- 2.13 Only freshwater bathing is permitted as a treatment for amoebic gill disease, unless:
- a) directed by the designated veterinarian for fish welfare reasons, or
  - b) specified in the Veterinary Health Plan where prior approval has been obtained from RSPCA Australia.
- 2.14 Freshwater bathing must take place before gill lesions progress to the extent that fish welfare is compromised.

### Broodfish<sup>5</sup>

- 2.15 The insertion of transponder tags and the removal of tissue must:
- a) only be performed on anaesthetised fish
  - b) include measures which aim to prevent infection at the wound site.

### Lighting

- 2.16 Lighting must be maintained at a level suitable to each stage of development as detailed in the Veterinary Health Plan.
- 2.17 Fish must be protected from exposure to high levels of UV light.
- 2.18 Fish must be protected from any sudden changes in lighting levels.

### Euthanasia

- 2.19 Fish must not be left to die in air.
- 2.20 Moribund fish or sick or injured fish found not to be recovering must be euthanased promptly where accessible.

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<sup>5</sup> **Broodfish**, as defined in these Standards, are breeding stock of Atlantic salmon housed in freshwater tanks or ponds and used for the production of egg and sperm for breeding purposes.

- 2.21 The approved euthanasia methods are:
- a) an overdose of a suitable anaesthetic using immersion in a solution of the agent
  - b) a non-recoverable percussive blow to the head of sufficient force to render the fish immediately dead
  - c) for fish <20g, severance of the spinal cord and cervical vertebrae by inserting a sharp instrument just behind the skull.
- 2.22 A manual percussive device must be available for all procedures where live fish are being handled.
- 2.23 Fish must be checked to ensure they are dead, evidenced by loss of movement, loss of reactivity to a stimulus, no rhythmic opercular movement and loss of eye roll.

**Other management or husbandry procedures**

- 2.24 The triploidisation process and the farming of triploid salmon are not permitted.
- 2.25 Management or husbandry procedures that directly impact animal welfare and are not specified in these Standards must not be performed unless prior approval has been obtained from RSPCA Australia.

### 3 Facilities and equipment

- 3.01 Surfaces, fittings, equipment and other facilities must be designed, constructed and maintained to:
  - a) minimise the risk of injury or disease in fish
  - b) provide protection from predators
  - c) prevent fish escaping
  - d) be free from rough edges and sharp protrusions
  - e) facilitate cleaning.
- 3.02 Where infrastructure is observed to cause injury in fish, action must be taken to prevent this situation recurring.
- 3.03 Where present, facility alarms and controls must be fully operational and maintained as required.
- 3.04 Date and time of checks of alarms and controls, notes of any problems identified and action taken must be recorded.
- 3.05 A maintenance program must be in place to ensure that facility defects are identified and prompt action is taken to ensure their return to full operation.
- 3.06 A record of facility maintenance and repairs must be maintained.
- 3.07 Procedures must be in place to manage equipment failures and other breakdowns that may impact on fish welfare.
- 3.08 Facilities (including feed storage areas) must be constructed and maintained to reduce the attractiveness to and restrict the entry of wild birds, rodents, predators and other pests or animals that could cause distress or transmit disease to fish.
- 3.09 Pest control programs must use the most humane techniques that are applicable to the situation, achieve the program aims and reduce the risk of impact on non-target species.
- 3.10 Equipment that is moved between sites and/or regions with different biosecurity status must be thoroughly cleaned and disinfected before use.
- 3.11 All solid and liquid waste materials must be stored and disposed of appropriately and in accordance with relevant legislation.

#### **Freshwater tanks and trays**

- 3.12 Where netting is used to cover tanks, it must be a suitable size for the fish in the tank to prevent escapes and fish becoming entangled.

#### **Water intake and discharge valves**

- 3.13 Water intake and discharge valves into the facility must be monitored to prevent blocking.
- 3.14 Intake valves must be alarmed.
- 3.15 Intake and discharge valves must be designed to prevent ingress of wild fish.



### **Pumps and pipes**

- 3.16 Pumps, pipes and couplings must be of a diameter which is appropriate for the size of the fish.
- 3.17 Pumps and pipes used for unloading must be positioned to minimise the height and distance that the fish have to be pumped.
- 3.18 Water must always flow through the pipework to minimise the incidence of scaling.
- 3.19 All fish must be removed from pipes before the end of the operation or during any pause in the operation in a manner that does not cause injury.

### **Dip and brail nets**

- 3.20 Dip nets must be:
  - a) of a suitable size so that they can be easily lifted
  - b) of a suitable size to comfortably contain the whole fish
  - c) have a suitable mesh gauge for the size of the fish that does not allow the fish to escape
  - d) designed to avoid injury to the fish
  - e) kept clean, disinfected and in good repair.
- 3.21 Brail nets<sup>6</sup> must not be used unless:
  - a) for the purpose of sample weighing or
  - b) prior approval has been obtained from RSPCA Australia.

### **Marine pens**

- 3.22 The minimum depth<sup>7</sup> of the pen must be 5m.
- 3.23 Netting used in the construction of pens must present a smooth, non-abrasive surface to limit injuries to the fish.
- 3.24 Pen nets must be regularly checked for holes and maintained accordingly.
- 3.25 Date of pen net checks and maintenance must be recorded.
- 3.26 Pen nets must be adequately tensioned and weighted to prevent distortion, taking into account currents, tidal flows, and adverse weather conditions.

### **Crowding device**

- 3.27 The sweep net or crowding device must:
  - a) have an appropriate mesh gauge for fish size
  - b) be of an appropriate size and design for the pen
  - c) have sufficient floatation

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<sup>6</sup> A **brail net**, as defined in these Standards, is a net hung from a metal hoop of around 1m in diameter typically operated using a winch or crane. The net may be lined with tarpaulin to retain water (wet brail). The free end of the net is attached to a rope which allows the bottom of the net to be opened to release fish or closed to catch fish.

<sup>7</sup> **Depth**, as defined in these standards, is taken as the actual depth (in metres) of the vertical pen net wall from the waterline to the base of the pen and not including the cone base of the pen net.

- d) be non abrasive
- e) be constructed of knotless mesh.

### **Fish counting**

- 3.28 If fish counting equipment is in place, it must:
- a) be of a design that does not cause injury to the fish
  - b) ensure fish are not out of water for more than 15 seconds
  - c) be maintained to minimise risk of injury to fish
  - d) be regularly calibrated to maximise accuracy.

### **Biofouling<sup>8</sup>**

- 3.29 Biofouling must not be allowed to build up in tanks, on pen nets or other infrastructure to the extent that:
- a) water flow and oxygen supply are reduced
  - b) risk of obstruction within pipes and machinery is increased or
  - c) the population of stinging, noxious and other potentially harmful fouling organisms reaches a size that fish welfare is likely to be compromised.
- 3.30 Where cleaning requires tank water volume to be reduced, the rate of discharge must be regulated to minimise the disturbance to fish within the tank.
- 3.31 Cleaning of marine pen nets *in situ* using automated devices must either:
- a) collect the released biofouling for disposal away from the pen or
  - b) minimise the extent that released biofouling moves through the pen.
- 3.32 The use of copper-based antifoulant on pen nets is not permitted.
- 3.33 A routine procedure for the assessment of biofouling must be in place.
- 3.34 A record of the extent of biofouling must be maintained including the types and relative proportions of fouling organisms.

### **Wellboats**

- 3.35 Wellboats must be fitted with moveable bulkheads.
- 3.36 A Closed Circuit Television system must be installed and operational to monitor fish behaviour during loading, grading, bathing and unloading.
- 3.37 The wellboat must be equipped with water quality monitoring and maintenance equipment.
- 3.38 The wellboat must be able to monitor and record the number of fish loaded in each well.
- 3.39 There must be sufficient natural or artificial lighting to enable continual observation and monitoring of the fish throughout the well.

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<sup>8</sup> **Biofouling**, as defined in these Standards, is the accumulation of microorganisms, plants, algae, or other marine organisms on wetted surfaces.

- 3.40 Where systems are reliant on automatic monitoring equipment, this equipment must be alarmed and underpinned by fully operational manual back-up systems.
- 3.41 The calibration accuracy of measuring/monitoring equipment must be checked at least weekly.
- 3.42 Date of calibration accuracy checks, notes of any problems identified and action taken must be recorded.
- 3.43 Wellboats must have the facility to close valves and re-circulate water.
- 3.44 Journey times and holding times under conditions of closed valves must allow water quality to be maintained.
- 3.45 Wellboats must have a continuous transfer system for loading.
- 3.46 Procedures for cleaning and disinfection of wellboats must be in place and complied with.
- 3.47 Grading/bathing or collection of fish from sites and/or regions with different biosecurity status with the same wellboat is not permitted unless the wellboat is cleaned and disinfected between the different biosecurity sites and/or regions.
- 3.48 Intra-site collections and collections from neighbouring sites of the same year class must be recorded.

## 4 Feeding

- 4.01 Feeding must be such that the quality, quantity and frequency of delivery meet the fish's requirements.

### Feed content

- 4.02 Feed for production fish must not contain growth regulators or added hormones.

### Feeding methods

- 4.03 Feed must be dispensed and distributed in a way that:
- a) encourages fish to feed
  - b) avoids undue competition
  - c) minimises waste.
- 4.04 Fish must be observed at least once a day during feeding.
- 4.05 Date and time of fish feeding checks, notes of any problems identified and action taken must be recorded.
- 4.06 Monitoring systems to prevent overfeeding must be in place in marine pens.

### Fasting

- 4.07 Any period of fasting must not exceed 72 hours, unless:
- a) directed by the designated veterinarian for fish welfare reasons, or
  - b) as required for fish handling procedures specified in the Veterinary Health Plan or Animal Care Statement where prior approval has been obtained from RSPCA Australia, or
  - c) weather or other adverse conditions are likely to compromise fish welfare.
- 4.08 Records must be kept of any period for which the fish were fasted.

## 5 Freshwater stage

### Stocking density

- 5.01 Stocking density must be reviewed at each site with respect to fish and environmental conditions (including water temperature and water quality) at least yearly.
- 5.02 Date of fish and environmental condition reviews, notes of any problems identified and action taken must be recorded.

### Water quality<sup>9</sup>

- 5.03 During incubation, oxygen saturation at discharge must be controlled, monitored and recorded daily.
- 5.04 Post hatch (including broodfish), the following water quality parameters must be monitored and recorded daily:
  - a) ammonia (NH<sub>3</sub> mg/l)
  - b) carbon dioxide (CO<sub>2</sub> mg/l)
  - c) nitrite (NO<sub>2</sub> mg/l)
  - d) nitrate (NO<sub>3</sub> mg/l)
  - e) oxygen saturation at discharge (%)
  - f) pH in inlet water
  - g) minimum and maximum water temperature (°C).
- 5.05 Oxygen saturation at discharge must be at least:
  - a) 90% during incubation
  - b) 80% post hatch.
- 5.06 Date and time of water quality checks, notes of any problems identified and action taken must be recorded.
- 5.07 Flow rate must be such that:
  - a) oxygen is replenished
  - b) during incubation, water hygiene and egg quality is maintained
  - c) fish easily hold their position in the water column
  - d) dead fish and suspended solids are removed.

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<sup>9</sup> **Water quality**, as defined in these Standards, refers to the sum of the water quality parameters that have the potential to affect fish health and welfare and include oxygen, carbon dioxide, nitrogen, ammonia, pH and salinity levels, water temperature as well as suspended solids present in the water (as relevant when fish are held in a freshwater tank or marine pen).

**Green eggs<sup>10</sup>**

- 5.08 The incubation environment must minimise movement of the eggs.
- 5.09 Water flow and/or oxygen alarms must be fitted to all water intakes to the incubation environment.
- 5.10 All eggs, unless produced on site, must be disinfected prior to entry to the hatchery.
- 5.11 Eggs being transported must be carried with a sufficient volume of water to avoid damage to the eggs.
- 5.12 Conditions in the incubation environment must be hygienic.
- 5.13 After placement, green eggs must remain undisturbed (other than for picking) for 250 degree days<sup>11</sup>.
- 5.14 Where picking is practised, dead/unviable eggs must be removed as required with minimum disturbance.
- 5.15 Regular checks must be made to ensure rapid detection of potential fungal infections.
- 5.16 Date and time of checks, notes of any problems identified and action taken must be recorded.

**Eyed eggs<sup>12</sup>**

- 5.17 Egg sorting (shocking) for dead/unviable eggs must not be carried out before they reach the eyed stage.
- 5.18 Shocking for dead/unviable eggs onto a dry surface is not permitted.
- 5.19 The transportation of eyed eggs must be done using boxes that are fit for purpose.

**Alevins<sup>13</sup>**

- 5.20 At or immediately after hatching, alevins must be provided with an environment that reduces activity and discourages bunching.
- 5.21 Alevins must be checked daily and any dead alevins removed.
- 5.22 Date and time of checks, notes of any problems identified and action taken must be recorded.
- 5.23 Nets must not be used to transfer alevins weighing less than 0.5g.

**Fry<sup>14</sup>**

- 5.24 Light levels must be such that they allow all fish in the water column to see the feed.

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10 **Green eggs**, as defined in these Standards, are fertilised eggs that are water hardened up to the time that the initial pigment of the fish eye is visible with the naked human eye. This will be at approximately 220 to 250 degree days.

11 **Degree days**, as defined in these Standards, is used to estimate the stage of development and is calculated by multiplying the average water temperature by the number of days after fertilisation.

12 **Eyed eggs**, as defined in these Standards, are eggs that have reached the stage of development where the black spot of the eye is clearly visible. Approximately 220 to 250 degree days after fertilisation.

13 **Alevins**, as defined in these Standards, are hatched eggs not yet ready for first feeding.

14 **Fry**, as defined in these Standards, are fish starting from first feeding up to approximately 1g.

5.25 Grading must not occur before the majority of fish weigh a minimum of 1.3g.

**Parr<sup>15</sup>**

5.26 Parr must be observed for signs of aggression and notes of any problems identified and action taken must be recorded.

5.27 Water temperature must not be manipulated above 16°C unless directed by the designated veterinarian.

**Pre-smoltification<sup>16</sup>**

5.28 Fish must not be transferred to seawater until they are fully smoltified.

5.29 Fish must be monitored for visual signs of smoltification.

5.30 The use of hypertonic water (water above 35 parts NaCl/1000) for smolt<sup>17</sup> survival testing is not permitted.

5.31 Date of smoltification checks, tests and notes of any observations made must be recorded.

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15 Parr, as defined in these Standards, are fish greater than about 1g and up to the start of smoltification.

16 Pre-smolt, as defined in these Standards, refers to the final production period when fish undergo a physiological transformation enabling them to survive in seawater. This process of internal physiological change is called 'smoltification'.

17 Smolts, as defined in these Standards, refers to fish that have completed the physiological transformation and adaption from freshwater to seawater and weigh an average of 100g.

## 6 Marine stage

### Stocking density<sup>18</sup>

- 6.01 Stocking density in marine pens must not exceed 15kg/m<sup>3</sup>.
- 6.02 Stocking density must be reviewed at each site with respect to fish and environmental conditions (including water temperature and oxygen stratification) for each year class placed.
- 6.03 Date of fish and environmental condition reviews, notes of any problems identified and action taken must be recorded.

### Water quality

- 6.04 The following water quality parameters must be monitored and recorded daily at the surface, middle and bottom layers of the water column:
  - a) oxygen saturation (%)
  - b) water temperature (°C).
- 6.05 If oxygen saturation level drops below 50% where fish are schooling, the water close to where fish are schooling must be supplied with supplementary oxygenation to provide a measurable increase in dissolved oxygen level at the target depth.
- 6.06 Date of water quality checks, notes of any problems identified and action taken must be recorded.
- 6.07 Flow rate must be such that:
  - a) oxygen is replenished
  - b) fish easily hold their position in the water column
  - c) suspended solids are removed.

### Macquarie Harbour

- 6.08 The farming of salmon in Macquarie Harbour, Tasmania is not permitted.

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<sup>18</sup> **Seawater stocking density**, as defined in these Standards, is the total biomass of the fish (in kg) divided by the marine pen volume (in m<sup>3</sup>). The depth of the pen, for the purpose of calculating volume, is the actual depth (in metres) of the vertical pen net wall from the waterline to the base of the pen not including the cone base of the pen net.



## 7 Wildlife interactions

- 7.01 Wildlife exclusion and control measures must at least meet the minimum requirements for the mitigation of seal interactions set out by the Tasmanian Government unless where specific measures are not permitted under these Standards.
- 7.02 Control of protected wildlife species must only take place where a current permit from the relevant regulatory authority has been issued.
- 7.03 Predators or other animals that have become trapped in seal and bird aerial wildlife exclusion nets must be removed promptly where accessible.
- 7.04 Immediate measures to control and/or deter predators must only be carried out under exceptional circumstances where:
  - a) there is sudden or unexpected damage to nets and a predator is injuring and/or killing the fish
  - b) a predator has entered the pen and is injuring and/or killing the fish.
- 7.05 The use of the following deterrent devices is not permitted:
  - a) bean bags
  - b) scare caps
  - c) electronic seal scarers
  - d) pingers.
- 7.06 Methods involving the trapping, holding/confining and release of wildlife must receive prior approval from RSPCA Australia.
- 7.07 If a predator attack has taken place, fish in the pen must be checked for signs of injury and, where accessible, injured fish that will not recover promptly must be euthanased.
- 7.08 A record must be kept of all interactions with protected wildlife species requiring active removal from the fish containment pen, including:
  - a) site, time and date at which the interaction occurred
  - b) number of pens affected and total fish count in each pen
  - c) names and position of persons involved in the control operation
  - d) reason the control method was required
  - e) details of control and/or deterrent method used
  - f) the estimated number and species of animal involved
  - g) the estimated number of fish injured and killed.
- 7.09 Methods of wildlife exclusion and/or control not specified in these Standards must not be performed without prior approval from RSPCA Australia.

## 8 Fish handling procedures

- 8.01 There must be a person responsible for fish welfare present throughout any fish handling procedure that involves spawning, crowding, bathing, grading, vaccination, transport and/or slaughter.
- 8.02 If fish must be handled:
  - a) adequate support must be given to the body
  - b) live fish must not be held by the tail only
  - c) live fish must not be thrown on solid objects.
- 8.03 Time out of water must not exceed 15 seconds for a live fish unless anaesthetised.
- 8.04 A sample number of approximately 100 fish must be monitored through any fish handling procedure that involves crowding, bathing or grading before the remaining population in order to determine that:
  - a) all equipment is set and functioning correctly
  - b) the process can proceed safely without causing injury to fish
  - c) fish recover quickly after the process.
- 8.05 Date and time of sample fish and equipment monitoring, notes of any problems identified and action taken must be recorded.
- 8.06 Fish handling procedures must be completed in one unbroken operation, unless:
  - a) weather or other adverse conditions are likely to compromise fish welfare
  - b) equipment failure occurs
  - c) as required for fish handling procedures specified in the Veterinary Health Plan or Animal Care Statement where prior approval has been obtained from RSPCA Australia.
- 8.07 Where extraneous/non-target fish are present during fish handling procedures:
  - a) they must be released where accessible
  - b) they must be euthanased promptly where injured and accessible
  - c) their estimated mortality numbers must be recorded
  - d) strategies for exclusion and/or removal of extraneous/non-target fish must be considered before fish handling procedures commence.

### Spawning<sup>19</sup>

- 8.08 Where dip nets are used to transfer broodfish to spawning tanks, the net must not be overloaded or result in injury or escape.
- 8.09 Where broodfish are checked for their progression towards spawning (degree of ripeness), the process must allow for effective restraint and assessment of the fish without injury or distress.

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<sup>19</sup> **Spawning**, as defined in these Standards, is the process of releasing and collecting eggs and sperm from broodfish.

- 8.10 Unless inappetent (not eating at all), broodfish must continue to be provided with feed to appetite.
- 8.11 Light, movement and noise around spawning tanks must be minimised.
- 8.12 Broodfish must be anaesthetised or euthanased prior to stripping<sup>20</sup>.
- 8.13 Anaesthetised broodfish must be supported on a padded surface and have only excess water removed to aid stripping.
- 8.14 Stripping must not result in scaling or excessive removal of mucus.
- 8.15 Stripping of broodfish more than twice over one season is not permitted.
- 8.16 Where air spawning is conducted on anaesthetised broodfish:
  - a) the needle must be placed correctly
  - b) the correct air pressure must be applied
  - c) residual air must be gently expelled by hand before the broodfish is replaced in the recovery tank
  - d) the wound site must be cleaned.
- 8.17 Following stripping, anaesthetised broodfish must be:
  - a) placed in a recovery tank
  - b) monitored to ensure they recover promptly from the anaesthetic
  - c) treated or euthanased promptly where a problem is identified.
- 8.18 Following stripping and while still in the recovery tank, broodfish must be observed at least twice every 24 hours to ensure that their appearance and behaviour are normal.
- 8.19 Times of broodfish observation checks, notes of any problems identified and action taken must be recorded.
- 8.20 Broodfish that are transferred from recovery tanks to holding tanks must be:
  - a) fully recovered from spawning
  - b) identifiable as having been stripped.
- 8.21 The following records must be kept for all broodfish transferred to spawning tanks:
  - a) date of fish transfer
  - b) number of fish transferred
  - c) feeding records
  - d) date and time of ripening checks
  - e) date and time of stripping
  - f) number of fish euthanased for stripping
  - g) number of fish recovered after stripping
  - h) the nature of any treatments/medications given to fish pre-and post-stripping and the date and time of their use

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20 Stripping, as defined in these Standards, is the physical removal of eggs and sperm from broodfish.

- i) number of post-stripping mortalities
- j) date fish transferred from recovery tanks into permanent holding tanks.

### **Crowding**

- 8.22 Crowding must not take place if adverse weather or environmental conditions are likely to compromise fish welfare.
- 8.23 Supplementary oxygen or aeration must be provided within the crowd at all times.
- 8.24 Oxygen saturation level during crowding must be:
  - a) continuously monitored
  - b) maintained above 80%.
- 8.25 The volume of the crowd must:
  - a) be sufficient to minimise fins breaking the surface
  - b) maximise the time that fish are able to swim at a depth to avoid bright light and human activity at the surface.
- 8.26 During the crowd, action must be taken if water quality deteriorates and/or fish show signs of stress including:
  - a) gasping, burrowing or violent splashing
  - b) excessive gill movement
  - c) dorsal skin colour changes from grey/black to blue/green
  - d) inability to maintain body position
  - e) mortalities.
- 8.27 Date, notes of any problems identified with water quality and/or fish behaviour and action taken must be recorded.
- 8.28 Where a wellboat is used, crowding of fish in the pen must not commence until the wellboat arrival time is known and transfer of fish can occur with no or minimal delay.

### **Grading**

- 8.29 Grading must be performed often enough to minimise size variation within tanks and pens.
- 8.30 The following grading methods are permitted:
  - a) manual grading using traditional 'Y' type boards
  - b) passive grading with 'flexi-panels'
  - c) automated grading.
- 8.31 No pen or tank must be graded more than twice in any one week or three times in any month unless directed by the designated veterinarian for fish welfare reasons.
- 8.32 Grading must not take place if adverse weather conditions are likely to compromise fish welfare.

- 8.33 Pumps must be able to pump the required distance and head.
- 8.34 The operator must be able to control the speed of the pump.
- 8.35 A counting/weighing device must be fitted on the inlet pipes in order to calculate fish numbers and stocking density.
- 8.36 The grader must be positioned so that the crew member operating the pumps can clearly see the fish.
- 8.37 Graders must have safe access around them to facilitate routine checks by staff.
- 8.38 Where a wellboat is used, the wells must contain sufficient water at the start of loading to prevent fish being injured from forceful contact with other fish, the walls or sides of the well.
- 8.39 Where fish are graded first into a temporary collection tank:
  - a) supplementary oxygen must be provided
  - b) the tank must not be overloaded
  - c) tanks must have valves for the return of fish to their designated tank
  - d) fish must not be removed from the tank using dip nets.
- 8.40 The angle and drop from the end of any pipe used to unload fish must be such that it:
  - a) avoids excessive splashing of fish upon entry to the water
  - b) avoids injuring the fish
  - c) allows them to disperse without colliding with other fish.
- 8.41 Returning pipes must be of sufficient length to return the graded fish away from the edge of the tank/pen.
- 8.42 Water depth and flow must be monitored to ensure that returning fish are not returned to water that is either too shallow, or at an incorrect flow rate, depth or quality.
- 8.43 The following grading records must be kept:
  - For all grading methods:
    - a) date/time grading commenced/finished
    - b) number of fish graded
    - c) post-grading mortalities, separated into 'deaths' and 'culls' noting the main reason for cause of death or culling
    - d) water quality parameters
    - e) equipment disinfection records.
  - For wellboat grading only, the following additional record must be kept:
    - f) stocking density in the well.

## **Bathing**

- 8.44 Supplementary oxygen or aeration must be provided within the treatment pen at all times.
- 8.45 Oxygen saturation level in the treatment pen during bathing must be:
  - a) continuously monitored
  - b) maintained above 80%.
- 8.46 Date, notes of any problems identified with water quality and action taken must be recorded.
- 8.47 A counting/weighing device must be fitted on the inlet pipes in order to calculate fish numbers and stocking density.
- 8.48 Following bathing, the pen net must be returned to full volume as soon as possible.
- 8.49 The duration of bathing must:
  - a) be appropriate to the severity of gill pathology
  - b) be decided by the designated veterinarian or suitably trained person
  - c) commence when the final fish enters the bath.
- 8.50 Where a wellboat is used:
  - a) the wells must contain sufficient water at the start of loading to prevent fish being injured from forceful contact with other fish, the walls or sides of the well
  - b) returning pipes must be of sufficient length to return the bathed population of fish away from the edge of the pen
  - c) returning pipes must be of sufficient length to avoid excessive splashing of fish upon entry to the water.
- 8.51 The following bathing records must be kept:
  - a) date/time bathing commenced/finished
  - b) number of fish bathed
  - c) post-bathing mortalities, separated into 'deaths' and 'culls' noting the main reason for cause of death or culling
  - d) water volume in treatment pen/tank
  - e) water quality parameters
  - f) equipment disinfection records.
  - g) stocking density in the treatment pen/well.

## **Anaesthesia**

- 8.52 Anaesthetics must be used:
  - a) according to the manufacturer's instructions
  - b) at a dosage suitable to the size of fish
  - c) with due regard to water temperature, water chemistry and accumulation of metabolic waste products
  - d) in conjunction with oxygenation of water
  - e) for a period of time sufficient for the desired depth of anaesthesia or sedation that permits rapid recovery (unless anaesthetic is being used for the purposes of euthanasia).

- 8.53 Fish must be observed for signs of rapid recovery following anaesthesia.
- 8.54 Date and time of fish recovery checks, notes of any problems identified (including slow recovery or signs of adverse effects) and action taken must be recorded.

#### **Vaccination**

- 8.55 Vaccination at less than 30g liveweight must be by a needle-less method only unless directed by the designated veterinarian for fish welfare reasons.
- 8.56 An assessment of fish condition must be made before the vaccination process begins to ensure that fish are suitably robust to undergo the procedure.
- 8.57 A sample number of approximately 100 fish, representative of the variation in size of the population of fish to be vaccinated, must be monitored through the vaccination process before the remaining population to determine that:
  - a) equipment is set and functioning correctly
  - b) depth of anaesthesia is adequate
  - c) no injury is being caused to fish
  - d) fish recover promptly from the process.
- 8.58 There must be continual monitoring to check for any fish which may have become trapped in pipes.
- 8.59 The number of fish that have become trapped in pipes must be recorded.
- 8.60 Where a vaccination procedure has been ineffective, notes of any problems identified and action taken must be recorded.

#### **Vaccination by immersion**

- 8.61 Supplementary oxygen or aeration must be provided within the vaccination tank.
- 8.62 Water in the vaccination tank must be monitored and changed at least according to the manufacturers' recommendation.
- 8.63 Action must be taken to change vaccination tank water if there are signs of poor water quality and adverse effects on fish welfare.
- 8.64 Where dip nets are used, fish must be able to swim freely within nets during vaccination.

#### **Vaccination by injection**

- 8.65 Fish must be anaesthetised before being vaccinated by injection.
- 8.66 Fish pumping must be controlled to:
  - a) maintain a steady supply of fish to the anaesthetic bath and to the vaccinating table
  - b) minimise time out of water for each individual fish.
- 8.67 Fish must be checked regularly throughout the vaccination procedure to ensure that vaccinations are being performed correctly and consistently.

- 8.68 Anaesthetised sample fish must be euthanased prior to vaccination accuracy tests.
- 8.69 Date and time of vaccination checks, notes of any problems identified and action taken must be recorded.
- 8.70 Needles must be inspected at least every 2 hours to ensure they are operating correctly and replaced if necessary.
- 8.71 Any gradients from the vaccination table to the recovery tank must be such that it reduces the risk of fish hitting the bottom of the tank or each other.
- 8.72 Water depth and flow must be monitored to ensure that returning fish are not returned to water that is either too shallow, or at an incorrect flow rate, depth or quality.
- 8.73 Fish must be monitored to ensure they recover promptly from the anaesthetic.

#### **Auto-vaccination**

- 8.74 Fish must have been pre-graded before they are vaccinated to allow correct calibration of the auto-vaccinator according to the size of the fish.
- 8.75 The machine must be calibrated according to the size of the fish, taking into account the vaccination depth, position, angle and dosage of the vaccine.
- 8.76 There must be back-up systems and contingency plans in place in order to deal with system malfunctions and breakdowns.

#### **Sample weighing**

- 8.77 Sample weighing to estimate biomass must be performed:
  - a) at least weekly during the freshwater phase (not including broodfish)
  - b) at least monthly during the marine phase.
- 8.78 During sample weighing, fish must not be crowded, unless sample weighing coincides with another fish handling procedure that requires fish to be crowded.
- 8.79 Dip nets used for sample weighing must not contain more fish than can be sampled at any one time.
- 8.80 Where brail nets are used for the purpose of sample weighing:
  - a) a wet brail must be used
  - b) the net must be no more than half filled with fish
  - c) the net must be raised vertically through the water column with minimal horizontal dragging.
- 8.81 Scales, balances and other electronic devices used to estimate biomass must be calibrated, suitably tared and adjusted to account for water.



## 9 Transport

- 9.01 There must be a person responsible for fish welfare present during loading and unloading.
- 9.02 Journeys must be planned to ensure that delays in moving the fish are avoided.
- 9.03 Any bath treatment must be completed a minimum of 14 days before transport, unless:
  - a) directed by the designated veterinarian or
  - b) for wellboats, when bathing is conducted during transport.
- 9.04 All transport tanks or wells must:
  - a) be fit for the purpose of transporting fish
  - b) be without leaks, chips, cracks, sharp edges or protrusions
  - c) contain sufficient water at the start of loading to prevent fish being injured from forceful contact with other fish, the walls or sides of the tank or well.
- 9.05 Care must be taken to ensure dead fish are not loaded for transport.
- 9.06 Moribund fish or sick or injured fish found not to be recovering must:
  - a) not be transported
  - b) be euthanased promptly.
- 9.07 Live fish must not be out of water for more than 15 seconds.
- 9.08 A counting/weighing device must be fitted on the inlet pipes in order to calculate fish numbers and stocking density.
- 9.09 All lids, outlets and any other openings must be fully secured before departure.
- 9.10 Equipment that the fish rely on for survival must be checked at least every 2 hours.
- 9.11 Date and time of equipment checks, notes of any problems identified and action taken must be recorded.
- 9.12 Supplementary oxygen or aeration which is sufficient to last at least 50% longer than the anticipated journey length must be available during all transportation.
- 9.13 Oxygen saturation level must:
  - a) be continuously monitored
  - b) be at least 90% and no higher than 140%.
- 9.14 Action must be taken where water quality deteriorates and/or fish are showing any, or a combination of the following indicators:
  - a) an increase in panic and flight responses
  - b) irregular swim patterns
  - c) abnormal gill/opercula movements
  - d) higher than expected scale loss
  - e) increases in mortality.

- 9.15 Date, notes of any problems identified with water quality and/or fish behaviour and action taken must be recorded.
- 9.16 The angle and drop from the end of any pipe used to unload fish must be such that it:
  - a) avoids excessive splashing of fish upon entry to the water
  - b) avoids injuring the fish
  - c) allows them to disperse without colliding with other fish.
- 9.17 Returning pipes must be of sufficient length to return the fish away from the edge of the tank/pen.
- 9.18 Any pipes used for unloading must be able to be adjusted to account for any rise and fall in the tide.
- 9.19 A process must be in place to safeguard fish welfare when removing the last fish from the tank or well.
- 9.20 Transport containers must be cleaned and disinfected after each consignment of fish is transported.

#### **Road transport**

- 9.21 The following water quality parameters must be continuously monitored:
  - a) ammonia
  - b) pH
  - c) CO<sub>2</sub>.
- 9.22 Before leaving the site, the driver must:
  - a) perform a visual check of the oxygen saturation level and rate of aeration into the tanks
  - b) record the oxygen saturation level.
- 9.23 Oxygenated water must be evenly spread throughout the water column.
- 9.24 When arriving at the discharge site, the driver must ensure compliance with company biosecurity requirements.
- 9.25 After arrival at the site, unloading of fish must take place without undue delay.
- 9.26 Fish must be unloaded from the transport tanks through valves.
- 9.27 Fish must not be unloaded from the transport tanks using nets unless required in an emergency situation.
- 9.28 Valves must be suitable for more than one fish to pass through at any one time.
- 9.29 All pipes must be securely attached to prevent fish from escaping during the unloading process.
- 9.30 Water must always be in the tanks during unloading in order to avoid the last fish from becoming dry.

- 9.31 Where fish are first unloaded from road transporters into tanks on the decks of boats, these tanks must:
- a) be prepared in advance of fish arrival
  - b) allow viewing of fish during transport.

### **Wellboat transport**

- 9.32 The following water quality parameters must be continuously monitored:
- a) ammonia
  - b) pH
  - c) CO<sub>2</sub>.
- 9.33 Water flow through the wells at discharge must:
- a) be sufficient to facilitate movement of the fish
  - b) not be so strong as to cause the fish injury.
- 9.34 The unloading of fish must not take place if adverse weather conditions are likely to compromise fish welfare.
- 9.35 Any visible surface mortalities or obviously moribund fish on the surface must be removed before unloading with the latter being euthanased promptly.
- 9.36 For wellboat transport of fish to slaughter, docking of the wellboat and operations at the slaughter plant must be coordinated in order to avoid unnecessary delays.
- 9.37 For wellboat transport of fish to slaughter where the journey is over 6 hours:
- a) water in the well must be chilled at a maximum of 1.5°C per hour
  - b) the maximum permitted drop in water temperature over a 24-hour period is 50% of the ambient temperature at the start of chilling
  - c) the minimum temperature of the water at the end of chilling must be no lower than 4°C.

### **Pushing and towing pens**

- 9.38 Before pushing or towing pens, biofouling must not have built up on nets to the extent that water flow and oxygen supply are reduced and fish welfare is likely to be compromised.
- 9.39 The speed of pushing/towing must:
- a) be suitable for the size of the fish
  - b) not be faster than the speed of the swimming fish.
- 9.40 Pen nets must be tensioned to avoid nets bagging.
- 9.41 Pushing/towing the pen through jellyfish or algal blooms must be avoided.

### **Helicopter transfer**

- 9.42 Staff must be able to communicate with the loading site and the helicopter.

- 9.43 All receiving pens must be clearly identified.
- 9.44 The fish must be transferred from the tanks to the helicopter bucket with extreme care.
- 9.45 Helicopter buckets and other ancillary equipment must be:
  - a) fully maintained
  - b) clean
  - c) suitable for the job.
- 9.46 There must be sufficient buckets to ensure that the time that fish have to wait for transportation is minimised.
- 9.47 Fish must not be placed into buckets until the imminent arrival of the helicopter.
- 9.48 The helicopter bucket must contain approximately two-thirds water before any fish are loaded into it.
- 9.49 Equipment that fish rely on for survival in the bucket must be switched on and working before the fish are put in.
- 9.50 A sample weight of fish must be known before loading commences.
- 9.51 Helicopter buckets must have their own independent supply of oxygen.
- 9.52 The helicopter bucket must be lowered gently into the water.
- 9.53 The helicopter bucket must be allowed to empty completely before moving off.

### **Transport records**

- 9.54 The following transport records must be kept:
  - a) last handling
  - b) last vaccination
  - c) last treatment (including anaesthetic)
  - d) feed withdrawal time
  - e) date of full smoltification
  - f) any clinical signs of disease at time of transport
  - g) crowding records
  - h) water quality parameters
  - i) numbers of fish in each tank/well/pen
  - j) stocking density in each tank/well/pen
  - k) numbers of fish put in each receiving pen
  - l) transport mortalities, separated into 'deaths' and 'culls' noting the main reason for cause of death or culling.

9.55 Where fish are transported to slaughter, the following additional records must be kept:

- a) time operation commenced (loading)
- b) time operation finished (unloading)
- c) number of fish transported for harvest.

For wellboat transport only, the following additional records must be kept:

- d) wellboat movements
- e) disinfection records
- f) route covered during transport
- g) timing of open and closed valve operation
- h) calibration of equipment.

## 10 Slaughter

- 10.01 Scheduling of slaughter must take into account a maximum fasting time of 72 hours which includes:
  - a) 24 hour fasting time in pen prior to transport
  - b) duration of transport to the slaughter site
  - c) holding time at the slaughter site before slaughter commences.
- 10.02 There must be a person responsible for fish welfare present throughout the slaughter process.
- 10.03 A Closed Circuit Television (CCTV) system must be installed and operational in the slaughter facility.
- 10.04 Procedures for the review, evaluation and use of CCTV footage must be in place and include at least the following:
  - a) be positioned to allow a clear view of fish stunning and slaughtering processes
  - b) be regularly reviewed by authorised staff to ensure these Standards are maintained.
- 10.05 Crowding and handling prior to slaughter must be kept to a minimum.
- 10.06 Where fish are slaughtered onto a vessel at the location of the marine pen:
  - a) crowding of fish in the pen must not commence until the harvest vessel has arrived
  - b) loading speed must be based on the largest fish and must always be in the range of 3 metres/second.
- 10.07 A counting/weighing device must be fitted on inlet pipes into the slaughter site, as applicable, in order to calculate fish numbers.
- 10.08 Pumping of the fish to the slaughter site must be done in a way that ensures that slaughter staff can maintain an efficient stunning procedure.
- 10.09 Fish must be stunned prior to slaughter.
- 10.10 Stunning methods using carbon dioxide are not permitted.
- 10.11 Where percussive stunning is used:
  - a) mechanical stunning devices must be used in preference to a manual percussive blow (except for emergency euthanasia)
  - b) one blow must be delivered to the top of the head just behind the eyes, of sufficient force to cause immediate and irreversible loss of consciousness that lasts until death
  - c) mechanical stunning devices must be monitored to ensure they deliver the stun at the correct location.
- 10.12 Bleeding must follow within 10 seconds of stunning.
- 10.13 Fish must remain unconscious following stunning and during bleed out until death supervenes.
- 10.14 Fish must be checked to ensure they have been effectively stunned and bled prior to entering the ice slurry.

- 10.15 Where the stun has not been effective, affected fish must be re-stunned prior to entering the ice slurry.
- 10.16 Where the bleed has not been effective, affected fish must:
- a) be checked to ensure they are stunned
  - b) be bled manually prior to entering the ice slurry
  - c) not be bled unless they are unconscious.
- 10.17 Where the stun and/or bleed has not been effective, equipment must be checked immediately and adjusted to correct the fault in the system.
- 10.18 Fish waste from slaughter operations must be contained and hygienically disposed of ashore.
- 10.19 Methods of stunning and/or killing not specified in these Standards must not be performed without prior approval from RSPCA Australia.

**Fish injury and damage records**

- 10.20 A sample of 100 individual fish per pen population must be examined for the following welfare outcomes:
- a) fin condition
  - b) skin condition
  - c) vertebral deformities
  - d) jaw deformities
  - e) flesh gaping
  - f) other notable negative condition.
- 10.21 Where more than 10% of the sampled fish have visible injuries or other damage:
- a) action must be taken to investigate the cause
  - b) procedures for managing and monitoring physical injury or damage must be revised as appropriate
  - c) changes to procedures for managing and monitoring physical injury or damage must be recorded in the VHP.

**END OF STANDARDS**



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