



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **SFIAQUA404C Operate hatchery**

**Release: 1**

## **SFIAQUA404C Operate hatchery**

### **Modification History**

Not Applicable

## Unit Descriptor

<b>Unit descriptor</b>	<p>This unit of competency involves managing the hatchery production of stock. It covers organising and supervising staff, conveying information, selecting equipment and method of operation, and monitoring and reviewing operations.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>
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## Application of the Unit

<b>Application of the unit</b>	<p>The unit has application to hatchery production for aquaculture and ornamental sectors. The unit applies to personnel who have hatchery technical responsibilities and supervise the work of others. Skills in supervising and assessing the performance of staff are covered by AHCWRK403A Supervise work routines and staff performance.</p> <p>The practical aspects of breeding and caring for progeny are covered in SFIAQUA314A Support hatchery operations.</p> <p>All enterprise or workplace procedures and activities are carried out according to <i>relevant government regulations, licensing and other compliance requirements</i>, including <i>occupational health and safety (OHS) guidelines</i> and <i>ecologically sustainable development (ESD) principles</i>.</p> <p>Equipment operation, maintenance, repairs and calibrations are undertaken in a safe manner that conforms to manufacturer instructions. Appropriate <i>personal protective equipment (PPE)</i> is selected, checked, used and maintained.</p>
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## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Select, condition and spawn broodstock	1.1. Breeding objectives, selection aims and strategies are confirmed with management. 1.2. Hatchery production schedule, labour and resource requirements and risk minimisation procedures are confirmed with production personnel. 1.3. Selection of broodstock ensures <i>quality requirements</i> are met. 1.4. Broodstock conditioning, spawning and recovery process are <i>managed</i> . 1.5. Broodstock to be spawned again at a later date are identified and moved to holding tanks or areas.
2. Select or cull progeny	2.1. <i>Progeny</i> husbandry is managed to ensure high survival and growth or other selection criteria. 2.2. Quality assessment of progeny is regularly undertaken and inferior progeny culled or removed. 2.3. Progeny health is monitored and any parasite and/or disease outbreaks quickly controlled with samples being sent to relevant authorities, where required. 2.4. Effects of feed and health treatments on progeny are monitored and actions taken to avoid or minimise health problems and negative effects on product quality. 2.5. Progeny growth/development is monitored using an appropriate performance recording system and harvesting is undertaken to meet marketing goals. 2.6. Breeding records are maintained according to industry standards and breeding program requirements.
3. Monitor, review and improve hatchery performance	3.1. The progress of hatchery production plan is reviewed regularly with management. 3.2. Physical and financial records are maintained for analysis and evaluation of hatchery performance. 3.3. Information on innovations is obtained and assessed to determine relevance and possible application. 3.4. Relevant innovations are tested to determine suitability and adaptability to individual circumstances, their benefit/cost assessed, and outcomes reported to the management team. 3.5. Changes or improvements to breeding objectives, selection aims and strategies are regularly discussed

ELEMENT	PERFORMANCE CRITERIA
	with management team.

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

#### Required skills

- communicating with production personnel on all aspects of hatchery production
- assessing options for mechanisation or automation of process or activity, including the use of specialised contract services
- contributing to enterprise strategy and planning meetings
- efficiently carrying out care of broodstock, larvae and juveniles
- handling and moving broodstock safely
- manipulating culture environment, as appropriate
- performing routine health care
- supervising staff.

#### Literacy skills used for:

- reading production plans and order requirements
- researching and assessing information on innovations
- recording information relating to hatchery operations
- labelling containers for shipment
- writing reports to management on hatchery operations.

#### Numeracy skills used for:

- counting quantities of stock
- maintaining and analysis of financial records
- recording and interpreting data relating to water quality.

#### Required knowledge

- cleaning and disinfection procedures and requirements for adequate disinfection
- clinical signs of ovulation and/or imminent spawning
- feed and other requirements of breeding stock and progeny
- other environmental factors or cues for reproductive behaviour
- preparation of broodstock and/or progeny for distribution.



## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment evidence required to demonstrate competence in this unit</b>	<p>Assessment must confirm the ability to:</p> <ul style="list-style-type: none"> <li>• collect and care for broodstock</li> <li>• breed and raise the progeny and prepare them for distribution</li> <li>• read and interpret work procedures</li> <li>• record relevant data according to workplace procedures.</li> </ul> <p>Assessment must confirm knowledge of:</p> <ul style="list-style-type: none"> <li>• breeding, nutritional, health and environmental requirements of broodstock and progeny.</li> </ul>
<b>Context of and specific resources for assessment</b>	<p>Assessment is to be conducted at the workplace or in a simulated work environment and should involve stock typically raised on aquaculture farms and hatcheries in the region.</p> <p>Resources may include:</p> <ul style="list-style-type: none"> <li>• broodstock or seedstock</li> <li>• hatchery and equipment for caring for and raising progeny</li> <li>• monitoring equipment</li> <li>• staff to supervise in a hatchery environment</li> <li>• reference material for research purposes.</li> </ul>
<b>Method of assessment</b>	<p>The following assessment methods are suggested:</p> <ul style="list-style-type: none"> <li>• project (work or scenario based)</li> <li>• case study analysis</li> <li>• research assignment</li> <li>• submission of records</li> <li>• written or oral short-answer testing.</li> </ul>
<b>Guidance information for assessment</b>	<p>This unit may be assessed holistically with AHCWRK403A Supervise work routines and staff</p>



**EVIDENCE GUIDE**

	performance, and other units within a qualification.
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**Range Statement****RANGE STATEMENT**

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

***Relevant government regulations, licensing and other compliance requirements*** may include:

- business or workplace operations, policies and practices:
  - commercial law, including fair trading and trade practices
  - consumer law
  - corporate law, including registration, licensing and financial reporting
  - disability policies and practices
  - equal opportunity, anti-discrimination and sexual harassment
  - industrial relations and awards, individual employment contracts and share of catch agreements
  - jurisdictional variations
  - superannuation
  - taxation
  - trade practices
  - warnings and dismissals
  - worker's compensation
- ESD principles, environmental hazard identification, risk assessment and control
- fisheries or aquaculture regulations, permits, licences, quotas, catch restrictions, and other compliance requirements, including:
  - Australian Exclusive Economic Zone
  - international treaties and agreements
- food safety, Hazard Analysis Critical Control

**RANGE STATEMENT**

	<p>Point (HACCP), hygiene and temperature control along chain of custody</p> <ul style="list-style-type: none"> <li>• imports quarantine and inspection, and importing approved arrangements for Australian Quarantine Inspection Service (AQIS), Australian Customs Service (ACS) and Biosecurity Australia (BA)</li> <li>• Indigenous native title, land claims and cultural activities, including fishing by traditional methods</li> <li>• maritime and occupational diving operations: <ul style="list-style-type: none"> <li>• foreign and Australian legislation applying to quarantine and customs</li> <li>• International Convention for the Safety of Life at Sea (SOLAS)</li> <li>• International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 1978)</li> <li>• Marine Emergency Response Search and Rescue (MERSAR)</li> <li>• National Standards for Commercial Vessels</li> <li>• pollution prevention - International Convention for the Prevention of Pollution from Ships (MARPOL 73/78)</li> <li>• Uniform Shipping Laws (USL) Code</li> <li>• use of vessels, right of way and other marine orders, bunkering and refuelling</li> </ul> </li> <li>• land, buildings and vehicles: <ul style="list-style-type: none"> <li>• buildings and structures design and appearance, constructions and additions</li> <li>• poaching, trespass and theft</li> <li>• road laws for use of motor vehicles, bikes, trucks and other transport equipment</li> <li>• soil and water management</li> <li>• use of chemicals and biological agents</li> <li>• use of firearms and powerheads</li> <li>• use of utilities, including water, natural gas, electricity and sewage</li> <li>• water or land lease, tenure or ownership and use</li> </ul> </li> <li>• OHS hazard identification, risk assessment and control</li> </ul>
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<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• product quality assurance:               <ul style="list-style-type: none"> <li>• correct naming and labelling (e.g. country of origin, Australian Fish Names Standard and eco-labelling)</li> <li>• correct quantities, sizes and other customer requirements</li> <li>• third-party certification (e.g. Australian Grown and ISO 14001:2004 Environmental management systems).</li> </ul> </li> </ul>
<i>OHS guidelines</i> may include:	<ul style="list-style-type: none"> <li>• appropriate workplace provision of first aid kits and fire extinguishers</li> <li>• clean, uncluttered, hygienic workplace</li> <li>• codes of practice, regulations and/or guidance notes which may apply in a jurisdiction or industry sector</li> <li>• enterprise-specific OHS procedures, policies or standards</li> <li>• hazard and risk assessment of workplace, maintenance activities and control measures</li> <li>• induction or training of staff, contractors and visitors in relevant OHS procedures and/or requirements to allow them to carry out their duties in a safe manner</li> <li>• OHS training register</li> <li>• safe lifting, carrying and handling techniques, including manual handling, and the handling and storage of hazardous substances</li> <li>• safe systems and procedures for outdoor work, including protection from solar radiation, fall protection, confined space entry and the protection of people in the workplace</li> <li>• systems and procedures for the safe maintenance of property, machinery and equipment, including hydraulics and exposed moving parts</li> <li>• the appropriate use, maintenance and storage of PPE.</li> </ul>
<i>ESD principles</i> may include:	<ul style="list-style-type: none"> <li>• controlling use and recycling of water, and managing water quality and quantity</li> <li>• increasing use of renewable, recyclable and recoverable resources</li> <li>• managing environmental hazard identification, risk assessment and control</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• managing imported products quarantine and inspection, facility biosecurity, translocation of livestock and genetic material, and health certification</li> <li>• managing stock health and welfare, especially for handling, holding, transport and slaughter</li> <li>• managing sustainable fisheries or broodstock/seedstock collection requirements, such as size limits, quotas, season restrictions, population dynamics, fishing impacts, reducing by-catch, fisheries management strategies and maintaining biodiversity</li> <li>• managing, controlling and treating effluents, chemical residues, contaminants, wastes and pollution</li> <li>• minimising noise, dust, light or odour emissions</li> <li>• planning environmental and resource efficiency improvements</li> <li>• preventing genetically modified and live cultured or held organisms from escaping into environment</li> <li>• protecting native and protected flora and fauna, marine or land parks or areas, adhering to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), the Ramsar Convention, World Heritage and other international treaties for which Australia is a signatory</li> <li>• reducing emissions of greenhouse gases</li> <li>• reducing use of non-renewable resources</li> <li>• reducing disturbances to soils, erosion and surface water flows from machinery use and other activities</li> <li>• reducing energy use and introducing alternative energy sources.</li> </ul>
<b>PPE</b> may include:	<ul style="list-style-type: none"> <li>• buoyancy vest or personal floatation device (PFD)</li> <li>• gloves, mitts or gauntlets, and protective hand and arm covering</li> <li>• hard hat or protective head covering</li> <li>• hearing protection (e.g. ear plugs and ear muffs)</li> <li>• insulated protective clothing for freezers or</li> </ul>

<b>RANGE STATEMENT</b>	
	<p>chillers and refrigeration units</p> <ul style="list-style-type: none"> <li>• non-slip and waterproof boots (gumboots) or other safety footwear</li> <li>• personal locator beacon or Emergency Position Indicating Radio Beacon (EPIRB)</li> <li>• protective eyewear, glasses and face mask</li> <li>• protective hair, beard and boot covers</li> <li>• protective outdoor clothing for tropical conditions</li> <li>• respirator or face mask</li> <li>• safety harness</li> <li>• sun protection (e.g. sun hat, sunscreen and sunglasses)</li> <li>• uniforms, overalls or protective clothing (e.g. mesh and waterproof aprons)</li> <li>• waterproof clothing (e.g. wet weather gear and waders).</li> </ul>
<i>Quality requirements</i> may include:	<ul style="list-style-type: none"> <li>• disease history</li> <li>• health and activity status</li> <li>• number, density, weight and volume</li> <li>• physical appearance, colour and appendages/fins</li> <li>• previous reproductive performance</li> <li>• sex</li> <li>• size</li> <li>• spawning condition and maturation index</li> <li>• wild caught or cultured stock.</li> </ul>
<i>Managed</i> may include:	<ul style="list-style-type: none"> <li>• acclimatisation</li> <li>• cleaning or disinfection of culture equipment</li> <li>• condition or maturation activities</li> <li>• holding</li> <li>• monitoring or treating health</li> <li>• quarantine</li> <li>• spawning induction: <ul style="list-style-type: none"> <li>• chemical</li> <li>• environmental, temperature, light, lunar cycle and atmospheric pressure</li> <li>• hormonal</li> <li>• special feed requirements</li> </ul> </li> <li>• staging or assessing maturation and cannulation.</li> </ul>

<b>RANGE STATEMENT</b>	
<b><i>Progeny</i></b> may include:	<ul style="list-style-type: none"> <li>• amphibian eggs, larvae or juveniles</li> <li>• aquatic plants or micro-algal cells, buds, seedlings and sporophytes</li> <li>• cell cultures</li> <li>• crustacean post-larvae or juveniles</li> <li>• finfish eyed eggs, fingerlings, fry, smolts or juveniles</li> <li>• molluscan larvae, seed, spat or juveniles</li> <li>• polyp colonies</li> <li>• reptile eggs, hatchlings or juveniles.</li> </ul>
<b><i>Quality assessment</i></b> (of spawn) may include:	<ul style="list-style-type: none"> <li>• behaviour and activity</li> <li>• colour and shape</li> <li>• density</li> <li>• health, disease and/or prophylactic treatment history</li> <li>• number</li> <li>• uniformity.</li> </ul>

### Unit Sector(s)

<b>Unit sector</b>	Aquaculture operations
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### Co-requisite units

<b>Co-requisite units</b>	

## Competency field

Competency field	
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