PERFORM AQUACULTURE OPERATIONS

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UNIT DESCRIPTION

This unit specifies the competencies required perform aquaculture operations. These include monitoring fish stock, water quality, handling fish stock, feeding fish stock, maintaining Recirculating Aquaculture Systems (RAS) and maintaining fish health.

ELEMENT AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function	These are assessable statements which specify the required level of performance for each of the elements. ***Bold and italicized terms are elaborated in the Range***
1. Monitor fish stock	1.1 ***PPEs*** are worn as per work requirement 1.2 ***Risk factors*** affecting health of ***stock*** during handling are identified as per fish farming manual 1.3 ***Monitoring equipment*** is checked as per fish farming manual 1.4 ***Housing*** is checked for damage as per fish farming manual 1.5 Monitoring equipment is positioned according to fish farming manual 1.6 Monitoring activities are carried out as per fish farming manual 1.7 Monitoring findings are recorded as per fish farming manual
2. Monitor water quality	2.1 PPEs, are worn as per work requirement 2.2 Tools and equipment are selected as per work requirement 2.3 ***Water supply system monitoring*** is carried out according to aquaculture water quality manual 2.4 Water treatment is applied as per work health and safety (WHS).

3. Handle fish stock	3.1 Tools and equipment are selected as per work requirement 3.2 ***Conditions*** adversely impacting fish stock during handling are recorded as per fish farming manual 3.3 Housing structures are prepared to meet the requirements of incoming fish stock as per fish farming manual 3.4 ***Fish seeds*** are selected as per fish farming manual 3.5 Fish seeds are stocked as per fish farming manual 3.6 Fish stock records are maintained as work procedure
4. Feed fish stock	3.1 PPEs, are worn as per the work requirement 3.2 Feeding tools and equipment are assembled as per work requirements 3.3 Fish weight to volume ratio is calculated as per fish feeding manual 3.4 Feed quality and specifications are checked against labels and delivery documentation as per fish feeding manual 3.5 ***Fish feed type*** is identified according to fish species 3.6 Fish is fed according to fish feeding manual 3.7 Uneaten feed is removed from water as per fish feeding manual 3.8 Fish feeding response is monitored as per fish feeding manual 3.9 Fish feed is stored as per fish farming manual
5. Maintain Recirculating Aquaculture Systems (RAS)	1.1 PPEs are worn as per work requirement 1.2 Tools and equipment are selected as per work requirement 1.3 ***Pumps*** are operated as per manufacturer's manual 1.4 ***Pumping system servicing is carried out*** as per manufacturer's manual 1.5 Filtration system is unclogged as per manufacturer's manual 1.6 Filtrated water is sterilized as per manufacturer's manual
6. Maintain fish health	6.1 PPEs are worn as per work requirement 6.2 Tools and equipment are assembled as per work requirement

	6.3 Disease signs and symptoms in cultured fish are checked as per fish health manual 6.4 New fish stock received is quarantined as per fish health manual 6.5 Observations of abnormal fish stock behaviour, mortalities or moribund fish stock are recorded as per fish health manual

RANGE

This section provides a work environment and conditions to which the performance criteria apply. It allows for a different work environment and situations that will affect performance.

Variable	**Range**
1. Personal protective equipment may include but are not limited to:	1.1 Gloves 1.2 Eye production 1.3 Lab coat 1.4 Rubber boots (steel toe)
2. Risk factors may include but are not limited to:	2.1 Scale loss 2.2 Loss of buoyancy balance 2.3 Physical injury to mucous membranes Eyes 2.4 Gills and fins
3. Monitoring equipment may include but are not limited to:	3.1 YSI handheld electronic meter 3.2 Doren water sampler 3.3 Buckets 3.4 Sample jars 3.5 Notebook
4. Housing may include but are not limited to:	4.1 Hatchery tanks 4.2 Net Pen 4.3 Pond
5. Water supply system monitoring may include but are not limited to:	5.1 Measuring and recording 5.2 Temperature 5.3 Oxygen 5.4 Ph 5.5 Ammonia 5.6 Total nitrogen and phosphorus
6. Conditions may include but are not limited to:	6.1 Rain 6.2 Wind and extreme Heat 6.3 Algal Bloom

	6.4 Increased vessel traffic around net pen
7. Fish seeds may include but are not limited to:	7.1 Fry 7.2 Advanced fry 7.3 Fingerlings 7.4 Sub-adult fish
8. Fish feed types may include but are not limited to:	8.1 Live feed 8.2 Supplemental pelleted feed 8.3 Feed flakes 8.4 Phytoplankton/algae 8.5 Artemia 8.6 Rotifers
9. Pumps may include but are not limited to:	9.1 Submersible 9.2 Centrifugal 9.3 Diaphragm Pumps 9.4 Reciprocating pumps
10. Pumping system servicing may include but are not limited to:	10.1 Inspecting the motor 10.2 Lubrication 10.3 Replace damaged seals and horses 10.4 Mechanical inspection of couplings 10.5 Filters 10.6 Pump flanges 10.7 Checking mounting points status

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Microsoft Excel
- Basic computer programming
- Observation
- Written
- Listening
- Problem-solving
- Communication skills
- Food safety risk assessment and communication
- Weighing
- Numeracy
- Fish handling and packaging
- Dissection
- Basic first aid
- Identification of signs of healthy fish
- Testing water quality
- Training skills
- Use of tools and equipment

Required Knowledge

The individual needs to demonstrate knowledge of:

- Theories and principles of polishing water for re-circulating systems
- Optimal water quality parameters required for aquatic life
- Basic protocols for filter cleaning
- Basic protocols rotation and replacement
- Servicing of pumps
- Basic plumbing
- Fish nutrition
- Fish behaviour and movement
- Food safety Standard
- Food Safety Hazards in Aquaculture
- Good aquaculture practices
- Good hygiene practices
- Safety precautions
- Principles of food hygiene
- National legislation and regulations
- Types of tools, equipment and PPEs
- Use of water test kits and equipment
- Basic fish anatomy and physiology
- Fish diseases
- Hazard Analysis Critical Control Points (HACCP

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified Risk factors affecting health of stock during handling as per fish farming manual 1.2 Checked housing for damage as per fish farming manual 1.3 Carried out monitoring activities as per fish farming manual 1.4 Recorded monitoring findings as per fish farming manual 1.5 Carried out water supply system monitoring according to aquaculture water quality manual 1.6 Applied water treatment as per work health and safety (WHS 1.7 Recorded conditions adversely impacting fish stock during handling as per fish farming manual

	1.8 Prepared housing structures to meet the requirements of incoming fish stock as per fish farming manual 1.9 Selected fish seeds as per fish farming manual 1.10 Stocked fish seeds as per fish farming manual 1.11 Maintained fish stock records as work procedure
2. Resource Implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place. 2.2 Access to relevant assessment environments. 2.3 Resources relevant to the proposed assessment activity or tasks.
3. Methods of Assessment	3.1 Practical tests 3.2 Third party reports 3.3 Written test 3.4 Projects 3.5 Case studies 3.6 Portfolio of evidence
4. Context of Assessment	4.1 This competency may be assessed in a work place or in a simulated work place.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.