

RTC3211A**Implement a maintenance program for an aquatic environment****Unit Descriptor**

Implement a maintenance program for an aquatic environment

Unit Sector

No sector assigned

ELEMENT**PERFORMANCE CRITERIA**

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|---------------------------------------|---|
| 1. Prepare for maintenance activities | 1.1 Enterprise guidelines and legislative requirements for the maintenance of the aquatic environment are identified, interpreted and applied.
1.2 Tools, equipment and machinery are selected and prepared for use according to enterprise guidelines and manufacturers specifications.
1.3 OHS hazards are identified, risks assessed, and suitable controls implemented.
1.4 Environmental implications associated with maintenance activities are identified and reported to supervisor. |
| 2. Maintain aquatic organisms | 2.1 Identification of indigenous, exotic and pest aquatic animals and/or plants is undertaken for the specific aquatic environment.
2.2 Aquatic plant and/or animal monitoring is undertaken and relevant data is recorded, maintained and applied to aquatic plant maintenance activities.
2.3 Aquatic animal and/or plant issues are reported to supervisor, with recommendations for action.
2.4 Control methods are implemented for excess aquatic animals and/or plants, and identified pest animals and/or plants.
2.5 Waste plant material is processed according to enterprise guidelines. |
| 3. Maintain water quality | 3.1 Where appropriate, water quality monitoring is undertaken for the aquatic environment and the input water resource according to standards for the end use of the aquatic environment.
3.2 Monitoring data is recorded, maintained and applied to water quality maintenance activities.
3.3 Debris is removed and processed using appropriate equipment according to enterprise guidelines.
3.4 Water quality issues are reported to supervisor, with suggestions for remedial action.
3.5 Where required, water is discharged , environment is cleaned , and water is recharged from the designated storage area or other input water resource. |

KEY COMPETENCIES

What processes should be applied to this competency standard? There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the key competencies, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

Key Competency	Example of Application	Performance Level
Communicating ideas and information	Written, oral and telecommunication of ideas and information relating to maintenance activities and problems encountered will be required with the supervisor and work group.	2
Collecting analysing and organising information	Information about the features and components of the aquatic environment, enterprise guidelines, site plans and maintenance program should be consulted, interpreted and applied to conduct and/or coordinate aquatic maintenance activities with further clarification sought from the supervisor where necessary.	3
Planning and organising activities	Work activities for the work group and self will be planned prior to and adjusted during the maintenance program.	3
Working with others and in teams	The aquatic maintenance program will involve facilitating and leading members of a team to complete maintenance activities on time and budget.	3
Using mathematical ideas and techniques	Mathematical application will be required to calculate areas, volumes, application rates and the logistical requirements of the maintenance program.	1
Solving problems	Site contingencies, personnel difficulties and timeline failures of a maintenance nature may require problem-solving techniques.	3
Using technology	Technological understanding will be required to access and apply maintenance program requirements specifications, to undertake maintenance in an aquatic environment, communicate and keep records	3

RANGE STATEMENT

What enterprise guidelines may apply to the specific aquatic environment?	Work guidelines will be based on sound aquaculture, horticultural and environmental principles and practices, and may include supervisors oral or written instructions, maintenance programs, site plans, enterprise Standard Operating Procedures (SOPs), specifications, routine machinery maintenance schedules, work notes, product labels and Material Safety Data Sheets (MSDSs), manufacturers service specifications and operators manuals, waste disposal, recycling and re-use guidelines, and OHS procedures.
What aquatic environment may require maintenance?	This may include contained water bodies, such as ponds and lakes and moving water bodies such as streams, creeks and rivers which may be artificially lined or have a natural bed. Aquatic systems may be still or reticulated, with water movement between a series of pools. Aquatic systems may support only plant life, but may also include fauna such as fish, amphibians and naturally occurring micro and macro invertebrates.
What tools, equipment and machinery may be selected?	Tools may include shears, secateurs, rakes, shovels, spades, buckets, wheelbarrows, brushes and hoses. Equipment and machinery may include aqua/marine harvester, brush-cutter, boats, pumps, filters and hoses.
What OHS hazards may be associated with the maintenance of an aquatic environment?	Hazards may include disturbance or interruption of services, drowning, the use of powered equipment in an aquatic environment, solar radiation, dust, noise, air, soil and water borne organisms, chemicals and hazardous substances, manual handling, moving machinery and machinery parts, uneven surfaces and flying objects.
What suitable controls are likely to be implemented?	Controls may include pre operational and safety checks of tools, equipment and machinery, erection of safety signs and barriers, maintaining a clean and safe work area, training in boating skills and the appropriate use of boating equipment, the observance of correct safety procedures in working from boats or adjacent to large bodies of water, appropriate use of personal protective equipment including sun protection and the wearing of life jackets, basic first aid training, safe handling, use and storage of chemicals and hazardous substances, and correct manual handling techniques.

What environmental implications may be associated with the maintenance of an aquatic environment?

- Beneficial environmental impacts may include control of the growth and spread of environmental weeds, and improving water and plant quality.
- Detrimental environmental impacts may include the use of environmentally harmful chemicals in or near a water body, soil erosion from inappropriate discharge and recharge procedures, or discharge of water for disposal.

What identification procedures may be relevant for maintaining an aquatic environment?

These may include identifying plants to genus, species and cultivar where relevant, collecting samples and developing an herbarium.

What aquatic animals and/or plants monitoring procedures may be undertaken?

Monitoring may include tallying of aquatic animals and/or plants organisms at established observation points against existing checklists, noting new species and incorporating them into the monitoring program, and collating monitoring data over time for analysis of the population dynamics of desired and pest aquatic plant and animal species.

What aquatic animals and/or plants issues may be identified and reported to the supervisor?

These may include issues for control of invasive and pest plants, population manipulation and individual plant pruning and/or animal removal, visitor and service access, and aesthetic and ecological balance.

What plant control methods may be applied in an aquatic environment?

Control methods for aquatic plants may include the application of herbicide to semi submerged or dry plants via spray or weed wand. Aquatic plants may also be controlled by pruning, slashing or manual removal. Animals may be controlled by removal from site or humane destruction. Access for control application may be from the bank of the water body, a boat or by wading.

What waste plant material may require processing for disposal?

This may include noxious weed material, and excess leafy and woody material removed from the aquatic environment.

How may waste and debris be processed?

Workplace waste processing procedures may include composting, toxic material separation and appropriate disposal, and separation and storage of litter and other non-toxic debris for rubbish collection.

What water quality monitoring procedures may be undertaken?	Monitoring of water quality may include field testing or the collection and analysis of water samples for micro and macro invertebrates, turbidity, salinity, acidity, pH, total phosphates, nitrates, dissolved oxygen, Biological Oxygen Demand (BOD), Iron, Chloride, Calcium Carbonate, temperature, total solids and micro-flora such as algae, and recording of water levels, and quantity and type of debris in the aquatic environment.
What water quality issues may be identified for the aquatic environment?	These may include non-compliance with standards and legal requirements, nutrient imbalances, toxicity, salinity, acidity, low or high water levels and algal blooms.
What water resource may provide water to the aquatic environment	Water resources may include mains water, sub-surface water, rain water, landscaped rain catchment, enterprise run-off, rain water tank, and a lake or natural waterway.
What end use may influence the maintenance requirements of the aquatic environment?	Use may include recreational activities and aesthetic display. Recreational use may include swimming and boating in large systems. Display may support aesthetic plants, fish and amphibians.
What debris may require removal from the aquatic environment?	This may include light litter such as fast food wrappings and containers, syringes, condoms, large, dumped refuse such as car bodies and drums, large plant waste, animal faeces and animal remains.
What work may be required when water is discharged?	Pre-operational and safety checks should be conducted on the water discharge system, animals and/or plants that require removal during cleaning are removed to a suitable environment for the duration of the cleaning process, and water is discharged to a designated storage or disposal location.
What cleaning may be required once water is discharged?	Cleaning may involve manual removal of algae and build-up material from the water body floor according to enterprise and OHS guidelines and sound environmental management.

EVIDENCE GUIDE

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

- Recognition, physiology and biological characteristics of animals and/or plants specific to the aquatic environment.
- Aquatic systems ecology.
- Relevant legislation regarding water pollution and management.
- Wildlife habitats associated with the aquatic environment.
- Food chain and nutrient cycling in aquatic systems.
- OHS legislative requirements and Codes of Practice.
- Regulations and/or Codes of Practice pertaining to Hazardous Substances.
- Safe systems and procedures for handling, transporting and storing chemicals and hazardous substances taking into account toxicity levels and environmental impacts.
- Regulations, Codes of Practices, enterprise systems and procedures for the safe operation and maintenance of machinery and equipment in aquatic environments, and in observing correct safety procedures in working from boats or adjacent to large bodies of water.
- Regulations and industry standards for water quality requirements in association with specified use.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

- Communicate verbally and in writing with work team members, supervisors, contractors and consultants.
- Interpret site plans and maintenance program requirements, and utilise proforma reporting, recording, analysis and work procedure documents.
- Measure materials, and aquatic site dimensions.
- Schedule and implement monitoring activities correctly, and record, interpret and apply monitoring data.
- Coordinate and supervise work group and own activities to sequentially and effectively complete maintenance activities in a timely, and cost effective manner.

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

**Essential Assessment
Information**

There is **essential information about assessing this competency standard for consistent performance and where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to both the **Assessment Guidelines** and the relevant **Sector Booklet**.