



Australian Government

AHCWAT501 Design water treatment systems

Release: 1

AHCWAT501 Design water treatment systems

Modification History

Release	TP Version	Comment
1	AHCv1.0	Initial release

Application

This unit of competency describes the skills and knowledge required to design water treatment systems.

It applies to individuals who analyse information and exercise judgement to complete a range of advanced skilled activities and demonstrate deep knowledge in a specific technical area. They have accountability for the work of others and analyse, design and communicate solutions to a range of complex problems. All work is carried out to comply with workplace procedures.

No occupational licensing, legislative or certification requirements are known to apply to this unit at the time of publication.

Pre-requisite Unit

Nil.

Unit Sector

Water (WAT)

Elements and Performance Criteria

Element	Performance criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Determine design requirements	1.1 Determine the quality of water to be treated and level of treatment required 1.2 Develop construction specifications that define the work required to treat water 1.3 Identify and protect environmentally sensitive areas 1.4 Document design calculations and decisions
2. Define pumping and	2.1 Select pumps to treat water efficiently and effectively as required

Element	Performance criteria
power systems	and to enable supply at the flow and the pressure required to operate the distribution system 2.2 Confirm that the pump motor combinations are efficient and the pumps are reliable, functional, serviceable and flexible for the intended application 2.3 Calculate energy requirements and determine the layout of electricity lines and check with local authority 2.4 Optimise the relationship between capital and operational costs including a comparison of energy sources 2.5 Select structures, valves and accessories and integrate into a functional system that can be monitored and maintained 2.6 Document performance indicators, design calculations and decisions 2.7 Develop construction specifications that define the work required to make a suitable pumping and power system 2.8 Check power supply design specification with power authorities
3. Design an water treatment system	3.1 Evaluate and design treatment systems with respect to a range of key variables 3.2 Size pipes, valves and fittings according to design system specifications so that capital cost is balanced against operation costs over the anticipated system life 3.3 Calculate and document flows, water levels and pressures to be within the acceptable tolerances for optimum performance 3.4 Confirm that flows, water levels and pressures are achievable by the pumps operating at optimum efficiency 3.5 Include mechanisms for controlling and adjusting pressure
4. Determine capital expense budget	4.1 Document design calculations and decisions and collate plans, specifications and manuals 4.2 Organise a check of the design output by a competent designer 4.3 Determine and document materials required from plans and specifications 4.4 Estimate labour requirements based on documented work schedule, with reasonable allowance for variances in work schedules 4.5 Confirm that costing attributed to each component is based upon quoted information from suppliers, or sound analysis of individual elements
5. Determine operating expense budget	5.1 Confirm that operating expense budget indicates all expenses applicable to the completed system

Foundation Skills

Foundation Skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Unit Mapping Information

This unit is equivalent to AHCWAT501A Design water treatment systems.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>

Assessment Requirements for AHCWAT501 Design water treatment systems

Modification History

Release	TP Version	Comment
1	AHCv1.0	Initial release

Performance Evidence

The candidate must be assessed on their ability to integrate and apply the performance requirements of this unit in a workplace setting. Performance must be demonstrated consistently over time and in a suitable range of contexts.

The candidate must provide evidence that they can:

- collect and analyse information
- develop water treatment system specifications
- identify adverse environmental impacts of water treatment activities and remedial action
- identify design requirements

Knowledge Evidence

The candidate must demonstrate knowledge of:

- principles and practices of water treatment system design
 - automatic control and monitoring systems
 - budgeting, contractual development and obligations
 - cost/benefit analysis
 - design processes
 - developments in water treatment technology
 - enterprise policies and procedures
 - environmental impacts of water treatment
 - environmental protection agency regulations
 - waste management and environmental issues

Assessment Conditions

Assessors must satisfy current standards for RTOs.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>