Australian Government

Department of Education, Employment and Workplace Relations

RIIWMG601A Establish and maintain water management system

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the establishment and maintaining of water management systems in the coal and metalliferous mining and extractive industries. It includes: identifying and researching the organisation needs; facilitating site environmental investigation; developing, implementing and maintaining procedures for the system; and evaluating the system.

Application of the Unit

This unit is appropriate for those working in management or technical specialist roles, within or serving:

- Coal mining
- Extractive industries
- Metalliferous mining

Licensing/Regulatory Information

Refer to Unit Descriptor.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify and research organisation needs	1.1. Access, interpret and apply ***compliance documentation*** relevant to the establishment and maintenance of ***water management systems***
	1.2. Analyse organisation's goals, objectives and strategies to gain direction as to the type of ***research*** to be undertaken
	1.3. Investigate and analyse license, worksite environmental conditions and legislation to develop options, strategies and anticipated outcomes
	1.4. Evaluate existing system and equipment suitability, taking into account operational requirements, safety and health issues and environmental legislation/ regulations
	1.5. Research, evaluate, select and purchase new systems in line with operational and budget requirements, safety and health and environmental legislation/regulations
	1.6. Analyse and interpret research information to establish options and opportunities
2. Facilitate site environmental investigation	2.1. Ensure internal and external ***stakeholders*** are involved in the planning process in a way that uses their contribution effectively and gains their support for the outcomes.
	2.2. Establish strategies and systems to support analysis of the worksite environments
	2.3. Ensure worksite environments are investigated to identify and assess the factors, which impact on work development
	2.4. Ensure market opportunities are identified and explored to assist the organisation to forecast trends and options
	2.5. Ensure water ***quantity*** and quality requirements and excesses are determined
	2.6. Ensure threats and opportunities are identified, analysed and used to optimise project outcomes
	2.7. Ensure titles searches are undertaken
	2.8. Ensure legal obligations are identified and documented

3. Develop, implement and maintain procedures for the system	3.1. Ensure contingency plans for flood routing of water in operational area to cover peak flows are developed and implemented 3.2. Ensure ***site plans*** for ***surface drainage and total reticulation network*** are developed and implemented to service the life of the mine according to ***engineering principles*** 3.3. Ensure procedures for ***pumping waters*** from the mine are developed and meet licence conditions. 3.4. Ensure procedures for work are developed for drainage and road geometry in accordance with engineering principles and to minimise environmental impacts 3.5. Ensure staged development of civil aspects to the worksite are planned and interpret 3.6. Ensure water treatment systems are designed to specification to meet requirement of the water management system 3.7. Ensure procedures for ***maintenance work for the drainage scheme*** of the worksites are developed and implemented 3.8. Identify, clarify and communicate roles and responsibilities to implement mine water management system 3.9. Develop and implement information and training systems to support water management to ensure the implementation and application of the system 3.10. Prepare an emergency response plan for failure or critical aspects of mine water management system
4. Evaluate the system	4.1. Identify and agree on performance indicators and criteria for the evaluation of statutory compliance and effectiveness of the water management system 4.2. Ensure site drainage, reticulation and wastewater treatment is monitored against agreed indicators 4.3. Ensure quality of site drainage effluent is monitored, recorded and reported to meet environmental and organisation requirements 4.4. Ensure hydrological effects and sensitive

	ecological/ conservation sites are monitored 4.5. Ensure instances of non-compliance with ***regulatory requirements*** are responded to in accordance with state/local government requirements and organisation's requirements

Required Skills and Knowledge

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

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to establish and maintain water management system:

- apply legislative, organisation and site requirements and procedures
- access and use appropriate information management technologies
- read and interpret survey plans
- interpret geological and hydrological data
- apply procedures to analyse and review water management systems
- apply auditing procedures
- apply resource plan develop procedures
- apply techniques to evaluate new and used equipment
- apply processes required to gain statutory/legal approvals
- apply procedures to implement change
- apply people and processes management techniques
- apply projects and tasks management procedures
- apply techniques for negotiation with internal/external customers, community and statutory/legal authorities
- prepare and present management reports
- prepare operating budgets
- prepare tender specifications
- apply conflict resolve techniques

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to establish and maintain water management system:

- drainage systems
- emergency response and disaster planning procedures
- environmental requirements and management
- financial management
- mine design relating to mine water management systems
- mine operating procedures , including those applying to mine water management
- mine plant and equipment
- mine water management systems
- organisational objectives

- resource monitoring
- risk management; principles, strategies and applications
- safety and health requirements and management
- safety features for water management systems
- statutory control requirements
- team management
- training and assessment systems

Evidence Guide

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.	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	The evidence required to demonstrate competency in this unit must be relevant to worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the establishing and maintenance of water management systems • implementation of procedures and techniques for the safe, effective and efficient establishing and maintenance of water management systems • the identification of the relevant information and scope of the work required to meet the required outcomes • the identification of viable program options and the selection of options that best meet the required outcomes • working with others to undertake and complete the establishing and maintenance of water management systems • consistent and timely establishing and maintenance of water management systems
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills. • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job.

	• Customisation of assessment and delivery environment to sensitively accommodate cultural diversity. • Aboriginal people and other people from a non English speaking background may have second language issues. • Assessment of this competency requires typical resources normally used in a civil works environment. Selection and use of resources for particular worksites may differ due to site circumstances. • Where applicable, physical resources should include equipment modified for people with disabilities. • Access must be provided to appropriate learning and/or assessment support when required.

Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods:
	• written and/or oral assessment of the candidate's required knowledge
	• observed, documented and/or first hand testimonial evidence of the candidate's:
	  • implementation of appropriate procedures and techniques for the safe, effective and efficient achievement of the required outcomes
	  • identification of the relevant information and scope of the work required
	  • identification of viable options and the selection of options that best meet the required outcomes
	  • consistently achieving the required outcomes
	• first hand testimonial and documentary evidence of the candidate's:
	  • working with others to undertake and complete the establishing and maintenance of water management systems
	  • consistent and timely gaining of approval of water management systems

	• provision of clear, timely required support and advice on the implementation of water management systems
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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 compliance documentation may include:	• legislative, organisation and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Water management system includes:	• all actions to obtain, introduce and distribute the water required for operations (both potable and process water). It also includes the treatment of water and the disposal of excess, unwanted and/or wastewater from the site
Water management system parameters may include:	• objectives • system boundaries • hazard and consequence types • methods • team processes • timings • venue/locations • consultation processes
Water management systems and measures may include those focused on:	• organisational goals, objectives and strategies • resources • internal and external stakeholders • environmental factors
Research may include:	• geological • climate • hydrology • topography • environmental factor • cultural and biological environments • monitoring water/equipment for leaching • water runoff monitoring for contaminants • establishing bore fields

	• knowledge of local rainfall • measuring of water usage • cost of water • water treatment requirements • predictions on water quantity, quality • water wastage
Stakeholders may include:	• regulatory authorities • tenderers • operating managers • project managers • contractors • employees • scientists • community • suppliers • customers
Quality may include:	• total dissolved solids • turbidity • heavy metals • organics • salinity • acidity/alkalinity • suspended solids • hydrocarbons • temperature
Site plans may include:	• mine development plans • layout of water reticulation system • amenities • culverts and drains • topography • controls • reservoirs and dam sites • treatment ponds • pumping stations
Surface drainage and total reticulation network may include:	• storage areas • table drains • culverts • channels • pipe works • trenches • manhole and gully pits

	• pumps
Engineering principles may include:	• water flow • reticulation techniques • drain design principles and standards • rural road design principles and standards • earthwork activities
Waters pumping may be from:	• settlement ponds • holding or tailing dams • sump sites
Maintenance work for the drainage scheme may include:	• pit works • roadways • administration areas • boundary conditions
Regulatory requirements may include:	• boundaries, leases, tenements and licence conditions • contamination precautions • emergency response • council • environmental - noise/air/water and conditions of licence • mine safety and health • rehabilitation • wildlife corridors
Regulatory bodies may include:	• mineral resources or appropriate body • safety and health authority • environmental authority/EPA • local government • harbours and marine • port authority • tenement authority • company policy and procedures

Unit Sector(s)

Water Management

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.