



Australian Government

Department of Education, Employment and Workplace Relations

RIINHB320A Construct monitoring bores

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the construction of monitoring bores in the drilling industry. It includes planning and preparing for constructing monitoring bores, constructing monitoring bores, purging bores, disinfecting/decontaminating bores and drilling equipment, decommissioning test holes, and completing and submitting required reports. Licensing, legislative, regulatory and certification requirements that apply to this unit can vary between states, territories, and industry sectors. Relevant information must be sourced prior to application of the unit.

Application of the Unit

This unit is appropriate for those working in an operational role at worksites within:

- Drilling

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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for constructing monitoring bores	1.1. Access, interpret and apply compliance documentation relevant to the work activity 1.2. Discuss scope of work with client to gain general agreement on drilling plan, including method of drilling, construction detail and materials to be used, and development requirements 1.3. Apply work instructions for the allocated task 1.4. Identify, manage and report all potential hazards, including any contaminants that may be encountered during drilling 1.5. Resolve coordination requirements with others at the site prior to commencing and during work activities 1.6. Regularly communicate up to date information on progress, geology and/or problems encountered, to client and/or other relevant parties
2. Construct monitoring bores	2.1. Use approved procedures to assemble and insert casing and screens 2.2. Use equipment for assembly safely and in accordance with approved procedures 2.3. Place artificial pack material in a manner so as to ensure uniform distribution in the annular space without bridging 2.4. Construct bore in accordance with applicable regulations and standard bore construction procedures 2.5. Demonstrate a knowledge of basic geological data 2.6. Accurately calculate basic numerical tasks 2.7. Maintain records accurately and legibly 2.8. Label and secure the well 2.9. Complete a construction diagram showing all details of the construction 2.10. Read and interpret a range of documents, including plans, diagrams and logs to determine the appropriate design for the monitoring well 2.11. Measure and record Standing Water

	Level
3. Purge bores	3.1. Use development techniques with care to prevent collapsing of casing or screens 3.2. Use a range of development techniques to improve hydraulic transmissivity around the bore
4. Disinfect/decontaminate bore and drilling equipment	4.1. Ensure disinfection/decontamination complies with relevant standards or regulatory requirements 4.2. Handle chemicals in accordance with manufacturer's recommendations 4.3. Use appropriate personal protective equipment
5. Decommission test holes	5.1. Carry out correct procedures for the decommissioning of test holes in any given type of geological formation and hydrological setting 5.2. Verify properly sealed hole for future reference 5.3. Dispose of drill and other fluids safely
6. Complete and submit required reports	6.1. Submit bore log, signed bore completion report and other written tasks to relevant authorities/client upon completion of the bore 6.2. Log bore holes in accordance with client/regulatory requirements 6.3. Locate bores according to instruction and provide sketches to regulatory authorities

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 of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes the ability to carry out the following, as required to construct monitoring bores:

- apply legislative, organisation and site requirements and procedures for constructing monitoring bores
- interpret and apply occupational health and safety requirements and procedures
- interpret site requirements and procedures
- interpret work requirements
- interpret geological and survey data
- apply mechanical and manual handling safety requirements and procedures
- cementing and grouting skills
- mixing and placing concrete
- drilling skills using an appropriate method
- operation of pressure cleaning equipment
- calculation and measurement skills

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly for its application in the various circumstances in which this unit may be used. This includes knowledge of the following, as required to construct monitoring bores:

- equipment - characteristics, technical capabilities and limitations
- basic geological formations, i.e. various formations which permit groundwater movement and factors affecting groundwater quality
- characteristics of 'good samples' required for water well construction
- ways in which sampling errors can occur
- types of muds, their use, and development techniques to remove them from bores
- problem solving techniques
- grout placement methods and procedures
- range of numerical calculations
- water sampling techniques and protocols
- legislative, site and manufacturer's requirements and procedures
- worksite coordination requirements and procedures
- site operating techniques and systems
- monitoring systems and alarms requirements and procedures
- ground preparation requirements and procedures

- inspection, fault finding and reporting requirements and procedures
- routine operator servicing, maintenance and housekeeping requirements and procedures
- site environmental and heritage requirements and constraints
- use of diagrams, plans and instructions for positioning, recording work or progress

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 constructing monitoring bores • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of monitoring bore construction • working with others to undertake and complete the construction of monitoring bores that meets all of the required outcomes • consistent timely completion of monitoring bore construction that safely, effectively and efficiently meets the required outcomes
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. • Assessment of this competency requires typical resources normally used in a resources and infrastructure sector environment. Selection and use of resources for particular worksites may differ due to the site circumstances. • 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. • 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 requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistent achievement of required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the construction of monitoring bores
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, organisational 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
Work instructions may come from briefings, handovers, plans and work orders and may be written or verbal, formal or informal and may include:	• nature and scope of tasks • specifications • quality of finished works • achieved targets • operational conditions • obtaining of required permits • site layout • out of bounds areas • worksite inspection requirements • lighting conditions • plant of equipment defects • coordination requirements or issues • contamination control requirements • environmental control requirements • barricade and signage requirements
Hazards may include:	• working in proximity to drilling rig
Contaminants may include:	• hydrocarbons (MAH's, PAH's) • organic compounds (pesticides) • chlorinated hydrocarbons (dioxins) (PCB) • heavy metals • asbestos • acids • acid sulphate soils
Coordination requirements may	• other equipment operators • maintenance personnel

include:	• supervisors • site personnel
Assemble and insert casing and screens may involve:	• solvent cement (PVC) • stainless steel screws (PVC) • threaded (PVC, FRP, ABS)
Equipment required for assembly and insertion may include:	• hand tools • power driven (electric, hydraulic or air) hand tools • solvent
Bore construction procedures may include:	• other regulations and standards • ANZECC/NHSMRC Guidelines (for working on contaminated sites) • AWRC Guide to sampling contaminated groundwater • U.S. OSHA Guidelines • organisation's own internal procedures • ARMCANZ "Minimum Construction Requirements for Water Bores in Australia" July 1997
Knowledge of basic geological data may include:	• rock types • aquifer systems • drillability • stability
Numerical tasks may include calculations such as:	• volume (e.g. mud pits, drums, tanks or bore holes of given dimensions) • up hole velocity • cement/water/additives quantities • conversion from imperial to metric and vice versa
Documents to determine design may include:	• results of test hole • hydrogeological data • environmental data • site reports • geological data • old bore hole logs
Written tasks may include:	• daily drill operation report • diagrams • brief descriptions

Unit Sector(s)

Drilling (General)

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.