Australian Government

Assessment Requirements for RIINHB411E Construct artesian (flowing) aquifer bores

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with RII Resources and Infrastructure Industry Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- construct artesian (flowing) aquifer bores on at least two occasions, including:
  - designing the bore to ensure the exclusion of unsuitable waters
  - identifying and applying appropriate headworks design for class 3 bore applications
  - selecting a bore site to prevent contamination and minimise interference with other bores
  - selecting a water entry mechanism from the formation to the bore, including:
    - open hole
    - slotted casing screens
    - gravel packs
  - assembling and inserting casing and screens
  - selecting, mixing and placing grout or otherwise seal surface casing from 10 m into competent impermeable strata and back to the surface with a minimum sheath thickness of 20mm above maximum shoe of coupling joint diameter size
  - grouting to seal intermediate and/or inner production casing strings with a 15mm minimum thickness grout sheath or to seal selected zones so that the water from the production bore is drawn from one primary formation only (unless otherwise allowed by the permit)
  - maintaining, testing and recording fluid properties including viscosity, mud weight, filtration and sand content
  - maintaining plumbness and alignment of the hole
  - developing the bore until a continuous, clean supply of water is obtained
  - testing pumps and developments to estimate the sand content and sustainable yield of the bore.

During the above, the candidate must:

- locate and apply relevant standards, legislation, documentation, policies and procedures
- implement the requirements, procedures and techniques for constructing artesian (flowing) aquifer bores, including:
  - selecting and wearing required personal protective equipment
  - plotting and interpreting sieve analysis results onto graphs preventing the inter mixing of aquifers with different water quality and/or Standing Water Level
- communicate clearly and concisely with clients, co-workers and management to receive and clarify work instructions and coordinate work activities prior to commencing
- comply with written and verbal reporting requirements and procedures work.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- key legislation required to construct artesian (flowing) aquifer bores
- key policies, procedures and established requirements for constructing artesian (flowing) aquifer bores, including those for:
  - Minimum Construction Requirements (MCR)
  - work health and safety
  - environmental issues
  - accidents and emergencies
  - safety data sheets (SDS)
  - fishing operations in regard to types of drilling being undertaken
  - housekeeping
- key site information, including:
  - basic geological formations which permit groundwater movement, including soil and rock classifications
  - factors affecting groundwater quality for aquifer systems, including drillability and stability
- key factors affecting work activities described in performance evidence above, including:
  - objectives of bore development
  - equipment characteristics, technical capabilities and limitations
  - safety hazards and sources of contamination when siting a bore
  - the necessity of having a signed agreement/contract with the client
  - the appropriate casing materials for various applications
  - wire-wound screens
  - drilling fluids, including testing and conditioning
  - grout placement methods and procedures including pressure grouting
  - results of sieve analysis
  - applications for natural pack, stabilising fill and artificial pack completion techniques
  - screen design parameters to ensure appropriate entrance velocities

  - characteristics of 'good samples' required for water well construction
  - ways in which sampling errors can occur
  - types of pathogens and contaminants including bacteria
- key calculations for constructing artesian (flowing) aquifer bores, including those for:
  - hole, annular fill or pack materials and mud pit volume in cubic metres or litres
  - required artificial pack design parameters and recommended annular thickness required
  - appropriate screen/slot design parameters, including for diameter, length, aperture size.

Assessment Conditions

Mandatory conditions for assessment of this unit are stipulated below. The assessment must:

- include access to:
  - personal protective equipment
  - equipment required to conduct artesian (flowing) aquifer bores
- be conducted in a safe environment
- be assessed in context of this sector's work environment
- be assessed in compliance with relevant legislation and regulations and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed
- confirm consistent performance can be applied in a range of relevant workplace circumstances.

Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated work environment* provided it is realistic and sufficiently rigorous to cover all aspects of this sector's workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.

Assessor requirements

Assessors must be able to clearly demonstrate current and relevant industry knowledge and experience to satisfy the mandatory regulatory standards as set out in the Standards for Registered Training Organisations (RTOs) 2015/AQTF mandatory requirements for assessors current at the time of assessment and any relevant licensing and certification requirements. This includes:

- vocational competencies at least to the level being delivered and assessed
- current industry skills directly relevant to the training and assessment being provided
- current knowledge and skills in vocational training and learning that informs their training and assessment
- formal relevant qualifications in training and assessment
- having knowledge of and/or experience using the latest techniques and processes
- possessing the required level of RII training product knowledge
- having an understanding and knowledge of legislation and regulations relevant to the industry and to employment and workplaces

- demonstrating the performance evidence, and knowledge evidence outlined in this unit of competency, and
- the minimum years of current** work experience after competency has been obtained as specified below in an industry sector relevant to the outcomes of the unit.

It is also acceptable for the appropriately qualified assessor to work with an industry expert to conduct assessment together and for the industry expert to be involved in the assessment judgement. The industry expert must have current industry skills directly relevant to the training and assessment being provided. This means the industry subject matter expert must demonstrate skills and knowledge from the minimum years of current work experience after competency has been obtained as specified below, including time spent in roles related to the unit being assessed:

Industry sector	**AQF indicator level*** **	**Required assessor or industry subject matter expert experience**
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Infrastructure	1	1 year
	2	2 years
Drilling, Coal Mining, Extractive (Quarrying), Metalliferous Mining and Civil Infrastructure	3-6	3 years
Other sectors	Where this unit is being assessed outside of the resources and infrastructure sectors assessor and/or industry subject matter expert experience should be in-line with industry standards for the sector in which it is being assessed and where no industry standard is specified should comply with any relevant regulation.	

*Guidance on simulated environments has been stipulated in the RII implementation guide located on VETNet.

**Assessors can demonstrate current work experience through employment within industry in a role relevant to the outcomes of the unit; or, for external assessors this can be demonstrated through exposure to industry by conducting a minimum number of site assessments as determined by the relevant industry sector, across various locations.

*** While a Unit of competency does not have an AQF level, where a unit is being delivered outside of a qualification the first numeric character in the unit code should be considered as the AQF indicator level for assessment purposes.

Links

Companion Volume implementation guides is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=88a61002-9a21-4386-aaf8-69c76e675272