Australian Government

RIINHB324X Carry out grouting or cementing operations

DRAFT

Release: 1

RIINHB324X Carry out grouting or cementing operations

Modification History

Release	Comments
1	This unit of competency was first released in RII Resources and Infrastructure Industry Training Package Release 13.0.

Application

This unit describes the skills and knowledge required to carry out grouting or cementing operations in drilling. It includes selecting grouting and cementing materials and techniques, performing calculations, grouting and cementing drill holes and equipment maintenance.

It applies to those working in operational roles. They generally perform tasks involving a broad range of skilled applications in a wide variety of contexts, which may involve some discretion and judgement in selecting equipment, services and contingency measures.

Licensing/Regulatory Information

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

Pre-requisite unit(s)

No pre-requisite units

Competency field(s)

N/A

Unit sector(s)

Drilling

DRAFT

© Commonwealth of Australia, 2026 Mining and Automotive Skills Alliance

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. Plan and prepare for the grouting or cementing operations	1.1 Obtain and confirm approved grouting or cementing program, including scope, method and completion requirements 1.2 Confirm roles, competencies and authorisations with relevant personnel 1.3 Identify and apply permit and site requirements applicable to the operation 1.4 Identify, assess, manage and report hazards, risks and environmental conditions and implement required control measures 1.5 Confirm communications, exclusion zone, contingency and emergency procedures for the operation 1.6 Select and wear personal protective equipment appropriate for work activities 1.7 Calculate and verify volume, material and pressure requirements for the operation 1.8 Select and confirm materials, equipment and consumables are compatible, correctly identified and available against the approved program
2. Prepare the worksite, hole and equipment	2.1 Inspect the worksite, confirm conditions against approved program and establish site access and emergency controls 2.2 Verify hole, casing and annulus against approved program and confirm they are ready for placement, reporting discrepancies 2.3 Inspect pressure-rated equipment for compatibility, condition and certification, then install and secure the placement arrangement 2.4 Position, install and secure all equipment for safe workflow, access and protection from contamination 2.5 Carry out pre-start and start-up procedures and confirm isolation and depressurisation provisions according to manufacturer specifications 2.6 Confirm personnel are in position and obtain authorisation to commence

DRAFT

© Commonwealth of Australia, 2026 Mining and Automotive Skills Alliance

3. Prepare and verify grout or cement	3.1 Confirm the batch plan and acceptance limits for the mix 3.2 Measure, introduce and mix materials in the specified sequence and quantities and condition each batch to the specified requirements, controlling exposure and manual-handling hazards 3.3 Sample and test the mix for the specified properties, compare results with acceptance limits and adjust only within the approved program and own authority 3.4 Quarantine, dispose of, rework or refer non-conforming material according to workplace procedures 3.5 Record material and batch identification, mix proportions, test results, adjustments and disposition according to the approved program
4. Place and control grout or cement	4.1 Commence placement using the approved method and sequence 4.2 Control pumping parameters and placement, including withdrawal and stage changes, to maintain continuous placement within program and equipment limits 4.3 Monitor and record placement parameters and material balance, and maintain communications and coordination through stage transitions 4.4 Compare actual response and material usage with calculated requirements, and investigate discrepancies where required 4.5 Isolate and depressurise the system before clearing blockages or disconnecting placement equipment 4.6 Complete placement to the specified endpoint
5. Verify placement and complete the hole	5.1 Verify placement using the specified evidence and methods, including final reconciliation of material usage against approved quantities 5.2 Identify and report non-conformance in the placement outcome and implement approved remedial activities within scope of own role 5.3 Maintain the required set or cure period and protect the hole and work area from disturbance 5.4 Construct, secure and protect the completed hole or wellhead according to scope of own role 5.5 Obtain or record authorised acceptance and communicate handover requirements

DRAFT

© Commonwealth of Australia, 2026 Mining and Automotive Skills Alliance

6. Respond to abnormal conditions and operational problems	6.1 Detect and assess abnormal conditions in material, equipment or placement performance 6.2 Isolate and depressurise the system where continued operation presents unacceptable risk or before inspection or corrective activity 6.3 Diagnose faults using records, data and observations, and rectify within scope of own role 6.4 Refer design changes, non-conforming work and matters outside own role to authorised personnel 6.5 Verify corrective action through controlled testing and monitoring before resuming work, and record and communicate the condition, action and outcome
7. Carry out post-operational procedures	7.1 Carry out controlled line-clearing before material sets, then shut down, isolate, depressurise and secure placement and ancillary equipment according to the approved program 7.2 Carry out routine housekeeping activities, including cleaning, maintaining and securing tooling and work area, according to workplace procedures 7.3 Identify, tag, quarantine and report defective or contaminated equipment according to workplace procedures 7.4 Contain, recover, reuse or dispose of waste materials according to environmental requirements 7.5 Secure and store materials and equipment to maintain condition and traceability 7.6 Reinstate the work area and verify the completed hole, casing or wellhead remain protected and secure 7.7 Complete records according to the approved program and workplace procedures 7.8 Communicate completion status and handover requirements

Range of conditions

N/A

© Commonwealth of Australia, 2026 Mining and Automotive Skills Alliance

Assessment Requirements for RIINHB324X Carry out grouting or cementing operations

Performance Evidence

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

- conduct grouting or cementing operations on at least two occasions without uncontrolled spillage of grout, cement or additives, including:
    - determining and collecting required material and equipment by:
        - measuring tank dimensions to calculate tank capacity and required volume of material
        - calculating specific gravity of mixtures and hydrostatic pressures including pressure differences between annulus and inside of casing
    - applying the grouting or cement placement method and technique specified in the approved program, including tremie or pressure cementing
    - mixing and testing grout or cement against the batch acceptance limits
    - constructing holes or well heads and installing security devices according to approved program

During the above, the candidate must:

- locate, confirm and apply the approved program, site requirements and workplace procedures
- select and wear personal protective equipment required for work and cleaning activities
- record casing lengths and quantities accurately
- confirm the consistency and accuracy of placed grout or cement against the approved program, including reconciling material used against calculated requirements
- respond to an operational problem in equipment or process
- disposing of any excess grout or cement according to environmental requirements and workplace procedures
- cleaning and storing tools and equipment used
- work effectively with others while undertaking and completing grouting or cementing tasks that meet the required outcomes including:
    - communicating with others to receive and clarify work instructions
    - using a range of communication techniques and equipment during operations to meet required outcomes
    - complying with record keeping and reporting requirements and procedures

DRAFT

© Commonwealth of Australia, 2026 Mining and Automotive Skills Alliance

Knowledge Evidence

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

- key policies, procedures and established requirements to conduct grouting or cementing operations, including those for:
    - Minimum Construction Requirements (MCR)
    - workplace health and safety
    - environmental practice
    - relevant equipment and material manufacturer or supplier specifications
    - accidents and emergencies
    - housekeeping
    - safety data sheets (SDS)
    - disposal of hazardous materials
- key features associated with conducting grouting and cementing techniques, including:
    - properties and effects of grout, cement or cement additives, including:
        - bentonite
        - fibreglass
        - spheres
        - accelerators and retardants
        - loss circulation materials
    - possible effects of grout, cement or cement additives on health
    - team roles and objectives during grouting or cementing operations.

Assessment Conditions

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

- include access to:
    - grout or cement and additives
    - mixing equipment, pumps, hoses and tools
    - drill hole
    - personal protective equipment
    - workplace documentation such as, drill plans, site plans and procedures, manufacturer instructions and safety data sheets
- be conducted in a safe environment
- be assessed in the context of this sector's work environment

DRAFT

© Commonwealth of Australia, 2026 Mining and Automotive Skills Alliance

- be assessed in compliance with relevant legislation/regulation and using policies, procedures and processes 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.

*Guidance on simulated environments has been stipulated in the RII Companion Volume Implementation Guide.

Industry Experts

An industry expert engaged by an RTO to wholly or partially conduct assessment, independently or together with another assessor, or be involved in an assessment judgement, must also satisfy the assessor requirements in applicable vocational education and training legislation, frameworks and/or standards.

Assessors and industry experts delivering training in the drilling industry sector must also have a minimum of three (3) years industry experience, directly relevant to the training and assessment being provided.

Mandatory Workplace Requirements

Assessment of performance evidence may be in a workplace setting or an environment that accurately represents a real workplace.

Unit Mapping Information

Previous Code and Title	Equivalence	Comments
RIINHB324E Conduct grouting or cementing operations	Equivalent	Updates to title, elements and performance criteria, performance and knowledge evidence, and assessment conditions

Links

Companion volumes, including implementation guides, are found on the national training register - https://training.gov.au/training/details/RII.

© Commonwealth of Australia, 2026 Mining and Automotive Skills Alliance