



Australian Government

RIICWD531D Prepare detailed design of subsurface drainage

Release: 2

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Modification History

Release	Comment
1	This unit replaces RIICWD531A Prepare detailed design of subsurface drainage
2	Required frequency and volume of evidence amended in Performance evidence. Substantial amendments made in Assessment Conditions field, including: references to Industry Sectors, assessor and subject matter expert experience requirements, how assessment should be conducted and what it should confirm.

Application

This unit describes a participant's skills and knowledge required to prepare detailed design of subsurface drainage in Civil construction.

This unit is appropriate for those working in management or technical specialist roles.

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

Unit Sector

Civil construction

Elements and Performance Criteria

1. Plan and prepare for the detailed design of subsurface drainage	1.1 Access, interpret and apply detailed design of subsurface drainage documentation and ensure the work activity is compliant 1.2 Obtain, read, interpret, clarify and confirm work requirements 1.3 Identify and confirm the subsurface drainage project requirements and information 1.4 Prepare a design plan which makes best use of the available resources
2. Undertake the detailed design of subsurface drainage	2.1 Interpret and analyse data and identify viable options 2.2 Interpret and analyse data and recommend the preferred option 2.3 Complete the detailed design of the subsurface drainage 2.4 Prepare a cost estimate for execution of the design 2.5 Participate in the review of design with peers and stakeholders

	2.6 Complete required documentation 2.7 Monitor and coordinate the progress of other team members involved in the design process 2.8 Gain design approval
3. Finalise design processes of subsurface drainage	3.1 Ensure filing of design records is completed 3.2 Complete and submit design cost and other reporting 3.3 Participate in performance review of the design process 3.4 Seek client feedback and contribute to the verification of the design 3.5 Close out all systems
4. Support and review the application of the design of subsurface drainage	4.1 Provide clarification and advice to those applying the design 4.2 Review the application of the design and recommend changes continuous improvement 4.3 Contribute to the validation of the design

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit. Further information is available in the Resources and Infrastructure Industry Training Package Companion Volume.

Unit Mapping Information

RIICWD531A Prepare detailed design of subsurface drainage

Links

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

Assessment Requirements for RIICWD531D Prepare detailed design of subsurface drainage

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Performance Evidence

Evidence is required to be collected that demonstrates a candidate's competency in this unit. Evidence must be relevant to the roles within this sector's work operations and satisfy all of the requirements of the performance criteria of this unit and include evidence that the candidate:

- locates and applies applicable legislation, documentation, policies and procedures
- implements the requirements, procedures and techniques for the safe, effective and efficient detailed design of subsurface drainage including:
 - accessing and interpreting plans, drawings, specifications and design briefs
 - accessing and interpreting engineering survey and geotechnical information
 - accessing and interpreting hydrological, meteorological, cultural and heritage data
- works effectively with others to undertake and complete the detailed design and documentation of subsurface drainage that meets all of the required outcomes including:
 - using a range of communication techniques and equipment to convey information to others
 - maintaining written and verbal reporting requirements
 - organising work activities to meet all task requirements
 - communicating clearly and concisely with others to receive and clarify work instructions
- demonstrates completion of detailed designs of subsurface drainage that safely, effectively and efficiently meets all of the required outcomes on more than one (1) occasion including:
 - interpret and apply civil concrete structures components selection data
 - carry out risk assessments
 - interpret subsurface drainage design data
 - identify and analyse catchments

- interpret and apply rainfall and runoff data
- estimate subsurface drainage design flows
- solve pipe flow problems and sizing of subsurface drainage components
- design storm water and sewerage drainage systems
- identify appropriate construction techniques
- develop and apply design plans
- interpret and analyse data
- complete a detailed design of subsurface drainage
- prepare a cost estimate
- participate in a design review
- obtain design approval
- complete and submit design cost
- review application of design and recommending changes

Knowledge Evidence

The candidate must demonstrate knowledge of the detailed design of subsurface drainage through:

- applying legislative, organisation and site requirements and procedures for:
 - risk assessment and management
 - statutory compliance
 - work health and safety
 - applying equipment safety requirements
 - complying with emergency issues
 - complying environmental issues
 - quality management
 - verbal and written communication
 - Australian and other relevant standards
 - Industry and organisational design procedures and practice
 - current Industry best practice
 - civil concrete structures design principles
 - civil concrete structures options
 - civil concrete structures geometric requirements
 - subsurface drainage surfacing requirements
 - trench and pit shoring requirements
 - potential hazards, constraints and conditions
 - design review
 - design approval
 - documentation and reporting
 - record keeping

- performance review
- systems close out
- techniques for choosing preferred options
- team leadership techniques
- operational techniques
- subsurface drainage construction plant and equipment capabilities
- cost estimation techniques

Assessment Conditions

- An assessor of this unit must satisfy the requirements of the NVR/AQTF or their successors; and Industry regulations for certification and licensing; and,
- this unit is best assessed in the context of this sector's work environment; and,
- outcomes of this unit that occur in an office-based setting may be assessed in a simulated 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; and,
- this unit must be assessed in compliance with relevant legislation/regulation and using policies, procedures, processes and operational manuals directly related to the industry sector for which it is being assessed; and,
- assessment may be conducted in conjunction with the assessment of other Units of Competency; and,
- assessment must confirm consistent performance can be applied in a range of relevant workplace circumstances; and,
- assessors must demonstrate the performance evidence, and knowledge evidence as outlined in this Unit of Competency, and through the minimum years of current* work experience specified below in an Industry sector relevant to the outcomes of the unit; or,
- where the assessor does not meet experience requirements a co-assessment or partnership arrangement must exist between the qualified assessor and an Industry subject matter expert. The Industry subject matter expert should hold the unit being assessed (or an equivalent unit) and/or demonstrate equivalence of skills and knowledge at the unit level. An Industry technical expert must also demonstrate skills and knowledge from the minimum years of current work experience specified below in the Industry sector, including time spent in roles related to the unit being assessed; and,
- assessor and Industry subject matter expert requirements differ depending on the Australian Qualifications Framework Level (AQF) of the qualification being assessed and/or Industry Sector as follows:

Industry sector	AQF** Level	Required assessor or Industry subject matter expert experience
Drilling, Metalliferous Mining, Coal Mining, Extractive (Quarrying) and Civil Construction	1	1 Year
	2	2 Years

Drilling, Coal Mining and Extractive (Quarrying)	3-6	3 Years
Metalliferous Mining and Civil Construction	3-6	5 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.	

*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 frequent site assessments across various locations.

**Where a unit is being delivered outside of a Qualification the first numeric character in the Unit code should be considered to indicate the AQF level

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