



Australian Government

MSL974018 Conduct geotechnical site investigations

Release: 1

MSL974018 Conduct geotechnical site investigations

Modification History

Release	Comments
Release 1	This version was released in <i>MSL Laboratory Operations Training Package Release 2.0</i>. Supersedes and equivalent to MSL974002 Conduct geotechnical site investigations. Foundation skill information added. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to prepare for and conduct and conclude site activities, such as excavations, sampling and testing as part of a geotechnical investigation team. Personnel are expected to solve common site problems and seek advice to deal with situations beyond their own technical competence.

This competency is typically performed by laboratory technicians working under the guidance of a geotechnical paraprofessional or engineer in the construction, mining and drilling industry sectors.

No licensing or certification requirements exist at the time of publication. However, regulations and/or external accreditation requirements for laboratory operations exist, so local requirements should be checked. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Competency Field

Testing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

- | | | | |
|---|---------------------------------------|-----|---|
| 1 | Prepare for on-site operations | 1.1 | Identify the job, location, work instructions, appropriate sampling and test procedures and safety requirements |
|---|---------------------------------------|-----|---|

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	1.2 Identify site hazards and identify appropriate personal protective equipment (PPE) and safety procedures that are specified for the job and materials used 1.3 Record description of the job to be undertaken, compare with specification and report any variations 1.4 Arrange for the collection, checking, stowing and transport of all tools, equipment and materials required at the site 1.5 Ensure site access requirements, such as entry permits and safety inductions, have been organised
2 Arrange excavation of boreholes, test pits and/or trenches	2.1 Identify the sampling/testing location 2.2 Excavate or oversee excavation to the sampling and testing depth, minimising disturbance and potential contamination of the site 2.3 Identify materials and record changes of strata, test results and other relevant information 2.4 Ensure materials from different strata are kept separate 2.5 Terminate the excavation at the appropriate depth and record the reason for termination
3 Conduct site sampling	3.1 Prepare and check sampling equipment and materials 3.2 Take disturbed and undisturbed samples in accordance with workplace methods and procedures 3.3 Label and record samples in accordance with workplace methods and procedures 3.4 Recognise and record details of site conditions that may impact on sample integrity or site interpretation
4 Conduct testing	4.1 Prepare and conduct pre-use checks of test equipment

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
		4.2	Perform, or assist with performing, tests in accordance with test methods or workplace procedures
		4.3	Record test data in accordance with test methods or workplace procedures
		4.4	Recognise obvious errors or atypical data and take appropriate corrective actions
5	Finalise site operations	5.1	Backfill or seal any excavation and ensure that it is left in a safe and uncontaminated condition
		5.2	Reinstate surfaces disturbed by sampling or testing
		5.3	Clean all equipment (and vehicle, as necessary) avoiding environmental damage, stormwater contamination or spread of pests
		5.4	Check all equipment and materials prior to re-stowing them for safe transport
		5.5	Handle and transport samples in accordance with established practices
		5.6	Notify appropriate site personnel on completion of investigations and prior to leaving site
		5.7	Check serviceability of test equipment before storage on return to base
6	Maintain records	6.1	Maintain equipment records in accordance with established practices
		6.2	Complete site safety plans, equipment logs and test reports in accordance with workplace procedures
		6.3	Maintain confidentiality of workplace information
7	Maintain a safe work	7.1	Use safe work procedures and PPE to ensure personal safety and that of others

Elements describe the essential outcomes.

environment

Performance criteria describe the performance needed to demonstrate achievement of the element.

- | | |
|-----|---|
| 7.2 | Minimise environmental impacts of testing/sampling and generation of waste |
| 7.3 | Collect and/or dispose of all waste in accordance with workplace procedures |

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Numeracy skills to:
 - interpret maps, site plans and drawings accurately
 - perform basic in situ tests and site measurements, including location and depth.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Equivalent to MSL974002 Conduct geotechnical site investigations, Release 1.

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>

Assessment Requirements for MSL974018 Conduct geotechnical site investigations

Modification History

Release	Comments
Release 1	This version was released in <i>MSL Laboratory Operations Training Package Release 2.0</i>. Supersedes and equivalent to MSL974002 Conduct geotechnical site investigations. Foundation skill information added. Range of conditions removed. Assessment requirements amended.

Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- prepared for, and safely and effectively conducted and concluded at least 2 geotechnical site investigations, to provide accurate sampling and testing data, site information and work results within the expected timeframe.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- concepts, purposes and principles of geotechnical site investigations conducted as part of job role
- standard methods for sampling and testing construction materials, such as soils, aggregates, concrete and asphalt
- identification and classification of soil, rock and fill materials
- uses and engineering properties of soil and rock materials
- principles of representative sampling and testing
- in situ testing methods used in job role
- site safety and management rules, including safety induction, risk assessments, controlled entry/exit to site and required personal protective equipment (PPE)
- common site problems and recommended corrective actions
- caving in of excavation walls:
 - drilling difficulties
 - not knowing the requirements of the design engineer
 - not understanding the nature of the item being designed (e.g. retaining wall, piled structure and earthworks)
 - sample loss during retrieval

- knowing when to stop a hole, or what and when to test and sample
- misidentification of samples and sampling locations
- equipment breakdown and breakage
- environmental problems and issues, including site access, inclement weather, traffic, wildlife, vegetation and construction activities
- awareness of environmental sustainability issues as they relate to the work task
- legal, ethical and work health and safety (WHS) requirements specific to the work task.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - access to geotechnical sites and relevant site documentation
 - workplace procedures, sampling plans, test methods and equipment manuals
 - consumables; hand tools; field sampling and test equipment, such as dynamic cone penetration (DCP) testing, standard penetration testing (SPT), shear vane, pocket penetrometer and water level indicator
 - excavation equipment, such as hand and power augers, powered excavators, generators and jack hammers
 - safety clothing and equipment, including helmets, boots, gloves, earmuffs and glasses.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>