



**Australian Government**

# **MSL975023 Supervise geotechnical site investigations**

**Release: 1**

# MSL975023 Supervise geotechnical site investigations

## Modification History

Release 1. Supersedes and is equivalent to MSL975023A Supervise geotechnical site investigations

## Application

This unit of competency covers the ability to supervise and direct geotechnical site investigations based on observation and testing. The unit involves confirming the scope of the investigation, liaising with site personnel and coordinating geotechnical sampling and testing activities, collecting reliable data and reporting results. Personnel are also expected to interpret results in the field, provide reliable advice to clients, recognise and rectify obvious errors or unexpected results and troubleshoot common problems.

This unit of competency is applicable to technical officers working in the construction materials testing sector. This unit of competency is typically performed by experienced technicians or engineering paraprofessionals, who often supervise, or direct less experienced technical personnel.

While no specific licensing or certification requirements apply to this unit at the time of publication, laboratory operations are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked.

## Pre-requisite Unit

MSL974002 Conduct geotechnical site investigations

## Competency Field

Testing

## Unit Sector

## Elements and Performance Criteria

Elements describe the essential outcomes.

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

- |   |                                        |     |                                                                                                                                   |
|---|----------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------|
| 1 | <b>Plan geotechnical investigation</b> | 1.1 | Identify the job, consult with stakeholders and obtain relevant information, including the purpose and scope of the investigation |
|---|----------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------|

- 1.2 Conduct desktop study of existing site information
  - 1.3 Inspect the site to determine the characteristics of the project
  - 1.4 Design inspection, sampling and testing program in accordance with specifications
  - 1.5 Select human and physical resources required for the job
  - 1.6 Identify site hazards and conduct risk assessment
  - 1.7 Organise site induction for support personnel, as required
  - 1.8 Brief support personnel on job-specific requirements
  - 1.9 Ensure ongoing liaison with stakeholders during project
- 2 **Establish on-site operations**
  - 2.1 Consult with project personnel to determine methods of communication, roles, responsibilities and expectations of each party, including identification of potential problems and conflicts
  - 2.2 Arrange deployment of personnel and resources to site
  - 2.3 Arrange for the physical location of services, as required, and reconcile test locations
- 3 **Coordinate geotechnical sampling and testing**
  - 3.1 Ensure sampling and testing is conducted in accordance with project requirements
  - 3.2 Ensure test data and observations are recorded in accordance with workplace practices
  - 3.3 Review the progress of sampling and testing against the project schedule and provide any feedback to client as required
  - 3.4 Review samples and field data and schedule testing as required
  - 3.5 Ensure the finalisation of site operations according to project brief or relevant standard

|   |                                                  |     |                                                                                          |
|---|--------------------------------------------------|-----|------------------------------------------------------------------------------------------|
| 4 | <b>Analyse project data and report to client</b> | 4.1 | Report test results to site superintendent at specified intervals                        |
|   |                                                  | 4.2 | Analyse project data and provide regular reports to the client using the agreed format   |
| 5 | <b>Maintain workplace records</b>                | 5.1 | Ensure site results are documented in accordance with workplace practices                |
|   |                                                  | 5.2 | Maintain security and confidentiality of workplace information                           |
|   |                                                  | 5.3 | Prepare and issue a final project report in accordance with client requirements          |
| 6 | <b>Promote a safe work environment</b>           | 6.1 | Promote the use of safe work procedures and personal protective equipment (PPE)          |
|   |                                                  | 6.2 | Minimise environmental impacts of testing/sampling and generation of waste               |
|   |                                                  | 6.3 | Promote the collection and disposal 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.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

## Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

### **Standards, codes, procedures and/or workplace requirements**

Standards, codes, procedures and/or workplace requirements include the latest version of one or more of:

- Australian and international standards covering the requirements for the competence of testing and calibration laboratories,

- laboratory safety, and quality and environmental management
- national work health and safety (WHS) standards and codes of practice, national measurement regulations and guidelines, and environmental legislation and regulations
- standard methods for sampling and testing construction materials, such as soils, aggregates, concrete and asphalt
- specific codes, guidelines, procedures and methods, such as:
  - AustRoads test methods, and State/Territory Road Authority test methods
  - National Association of Testing Authorities (NATA) documents regarding construction materials testing (Field application document)
- workplace documents, such as standard operating procedures (SOPs); quality and equipment manuals; calibration and maintenance schedules; material safety data sheets (MSDS) and safety procedures; material, production and product specifications; production and laboratory schedules; workplace recording and reporting procedures; waste minimisation and safe disposal procedures; maps and site plans
- sampling and testing procedures for specific sites, clients and samples

**Common site problems**

Common site problems include, but are not limited to, one or more of:

- 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

**Site hazards**

Site hazards include, but are not limited to, one or more of:

- solar radiation, dust and noise
- manual handling of heavy materials and equipment
- working in/on trenches, confined spaces, wet and uneven

- surfaces, heights and slopes
- vehicular and pedestrian traffic
- underground services, such as gas and electricity
- working close to earth moving equipment, trucks and overhead loads

**Safe work procedures** Safe work procedures include, but are not limited to, one or more of:

- locating site services before investigations commence
- use of signage, barriers, flashing lights and traffic control
- use of PPE, such as hard hats, hearing protection, gloves, goggles, coveralls and safety boots
- use of material safety data sheets (MSDS)
- use of machinery guards
- recognising and observing hazard warnings and safety signs/barriers
- handling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer instructions, and workplace procedures and regulations
- labelling of samples, reagents and hazardous materials
- regularly cleaning equipment and vehicles
- following established manual handling procedures

### **WHS and environmental management requirements**

WHS and environmental management requirements include:

- complying with WHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of samples

## **Unit Mapping Information**

Release 1. Supersedes and is equivalent to MSL975023A Supervise geotechnical site investigations

## **Links**

Companion Volume implementation guides are found in VETNet -

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

# Assessment Requirements for MSL975023 Supervise geotechnical site investigations

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## Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- supervising and directing at least two (2) geotechnical site investigations
- confirming the scope of the investigation and liaising with site personnel
- conducting desktop studies of existing site information, interpreting maps, site plans and drawings
- identifying/securing resources and briefing support personnel about investigation activities
- designing inspection, sampling and testing programs in accordance with specifications
- identifying and locating site services, sampling and testing sites
- coordinating geotechnical activities on-site to ensure safety of personnel and minimise environmental impacts
- ensuring the collection of reliable site data
- observing, interpreting and reporting site features and geotechnical conditions
- accurately identifying soil, rock and fill materials
- interpreting data in the field, analysing the results and providing reliable advice to clients
- recognising and rectifying obvious errors or unexpected results and troubleshooting common problems
- seeking advice about problems beyond technical competence from appropriate personnel
- using computer software to create/maintain databases and produce detailed investigation reports
- maintaining accurate and complete records
- working safely, and monitoring and promoting site safety.

## Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- purposes and principles of geotechnical site investigations supervised and directed as part of job role
- principles of planning and project management
- identification and classification of materials
- engineering properties of soil and rock materials

- representative sampling and testing methods (both in situ and laboratory) conducted as part of geotechnical site investigations relevant to job role
- uses of engineering materials in civil construction
- civil construction techniques relevant to job role
- common site problems and corrective actions
- relevant hazards, work health and safety (WHS) and environment requirements.

## Assessment Conditions

- Judgment of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event. The timeframe must allow for adequate assessment of operation under all normal and a range of abnormal conditions.
- This unit of competency is to be assessed in the workplace or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
  - MSL915001 Provide information to customers
  - MSL915002 Schedule laboratory work for a small team
  - MSL935001 Monitor the quality of test results and data
- Holistic assessment methods include:
  - review of investigation plans, sampling and testing programs, results, analysis and reports completed by the candidate
  - feedback from clients, supervisors and/or peers about the candidate's ability to supervise and direct geotechnical investigations safely, efficiently and in accordance with regulations and client instructions
  - observation of the candidate coordinating geotechnical sampling, testing and site reinstatement tasks
  - oral or written questioning about the planning, establishment and coordination of geotechnical investigations, including technical details of the collection and analysis of the data, common site problems and promotion of a safe work environment.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
  - access to geotechnical sites and relevant site documentation

- workplace procedures, site plans, sampling and test methods/programs 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, and sand replacement apparatus
- levelling equipment (dumpy and automatic levels)
- still/video camera, communication equipment
- 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 assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competence and currency.
- Technical competence can be demonstrated through:
  - relevant VET or other qualification/Statement of Attainment AND/OR
  - relevant workplace experience.
- Currency can be demonstrated through:
  - performing the competency being assessed as part of current employment OR
  - having consulted with a laboratory about performing the competency being assessed within the last twelve months.

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