



Australian Government

CPPSIS5061A Locate underground services in surveying practice

Release 1

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Modification History

Version	Comment
1	This version first released with CPP07 Property Services Training Package Version 12.

Unit Descriptor

This unit of competency specifies the outcomes required to locate underground services in surveying practice. It requires the ability to plan approaches in order to meet geophysics contingencies and management requirements. Functions would be carried out within organisational guidelines.

Application of the Unit

This unit of competency supports the application of managing teams, and sound communication, as well as the sound use of technology, understanding of geophysics concepts in relation to location of services, and the implementation of specifications. The skills and knowledge acquired on completion of this unit would support the needs of employees in surveying and spatial information services (SSIS).

Licensing/Regulatory Information

No licensing, legislative and regulatory requirements apply to this unit at the time of endorsement.

Pre-Requisites

Nil

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the required performance needed to demonstrate achievement of the element. Where ***bold italicised*** text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

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|---|---|-----|--|
| 1 | Plan processes to locate underground service. | 1.1 | <i>Objectives</i> , principal work activities and <i>constraints</i> are defined and documented with written survey specifications. |
| | | 1.2 | Details of instruments and basic <i>techniques</i> to be used are evaluated and determined. |
| | | 1.3 | <i>Geophysics methods</i> to locate services and <i>surveying data</i> requirements are determined. |
| | | 1.4 | Pertinent <i>legal and statutory standards</i> and requirements, and <i>OHS</i> standards are considered and adhered to. |
| | | 1.5 | Work is scheduled to be completed within time available. |
| | | 1.6 | <i>Equipment required for the location of services</i> is checked to be in good working order. |
| 2 | Implement plan to locate underground service. | 2.1 | <i>Project management mechanisms</i> are implemented to measure, record and report progress of activities in relation to agreed schedule and plans. |
| | | 2.2 | Required components relating to underground services are measured, managing the impact of <i>contingencies</i> and problems as they arise. |
| | | 2.3 | Data collected is scrutinised to determine <i>targets on lines of radar</i> . |
| | | 2.4 | Measured survey data is reduced to the project reference system for comparison with design. |

- 2.5 **Measurements** are validated and recorded according to **specifications**.
 - 2.6 Checks are completed according to **organisational guidelines**.
 - 2.7 Processes are followed that comply with **manufacturer specifications** for equipment use, relevant **legislation** and **company policy**.
- 3 Finalise the location of underground service.
 - 3.1 Relevant personnel are informed of the results according to organisational guidelines.
 - 3.2 **Required documentation** is completed according to organisational guidelines.
 - 3.3 Survey data is archived according to project specifications.
 - 3.4 Review of achievements against objectives is undertaken.

Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

Required skills

- analytical skills to identify underground survey project specifications
- communication skills to:
 - consult effectively with colleagues
 - impart knowledge and ideas through oral, written and visual means
- initiative and enterprise skills to translate requirements into design
- literacy skills to:
 - assess and use workplace information
 - locate and interpret legislation and other written documentation
 - prepare and manage documentation
 - read and write technical reports
 - research and evaluate project requirements
- numeracy skills to:
 - analyse errors
 - conduct image analysis
 - interpret and analyse statistics
 - perform mental calculations
 - record with accuracy and precision
 - undertake high-level computations
- planning and organising skills to:
 - coordinate technical and human resource inputs in research activities
 - prioritise activities to meet contractual requirements
 - plan and manage information
- spatial skills to:
 - archive and retrieve spatial data, and train others in this task
 - demonstrate proficiency with geophysics methods
 - manage and manipulate spatial data, and train others in this task
 - manage files, and train others in this task
 - solve problems relating to height, depth, breadth, dimension, direction and position in operational activity and virtual representation
- technology skills to:
 - use computers to complete business documentation
 - use instruments for geophysics processes

Required knowledge

- data formats
- data management processes
- data reduction and manipulation techniques
- guidelines of projects being undertaken, and limitations relating to equipment, measuring and analysis
- legislative, statutory and industry requirements and standards relating to underground surveying standards
- organisational policies and guidelines relating to locating underground services, such as OHS guidelines
- procedures for calibrating specialised surveying equipment
- project planning and control processes
- project review procedures
- requirements relevant to locating underground services:
 - accuracy and precision requirements
 - data capture and data set-out procedures
- surveying reference systems
- methods for locating underground services, including associated computations

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, the range statement and the Assessment Guidelines for this Training Package.

Overview of assessment	This unit of competency could be assessed on its own or in combination with other units relevant to the job function, for example CPPSIS5048A Conduct an engineering survey, CPPSIS5049A Conduct an engineering surveying project, and CPPSIS5057A Carry out a precision survey.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	A person who demonstrates competency in this unit must be able to provide evidence of: • matching objectives with resources to meet project deadlines • applying geophysics processes to survey practices • measuring a range of components relating to underground services • knowledge of geophysics methods.
Specific resources for assessment	Resource implications for assessment include access to: • assessment instruments, including personal planner and assessment record book • assignment instructions, work plans and schedules, policy documents and duty statements • registered training provider of assessment services • relevant guidelines, regulations and codes of practice • suitable venue and equipment. Access must be provided to appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Context of assessment	Holistic: based on the performance criteria, evidence guide, range statement and required skills and knowledge.
Method of assessment	Demonstrated over a period of time and observed by the assessor (or assessment team working together to conduct the assessment). Demonstrated competency in a range of situations, which may include customer/workplace interruptions and involvement in related activities normally experienced in the workplace. Obtained by observing activities in the field and reviewing induction information. If this is not practicable, observation in realistic simulated environments may be substituted.

Guidance information for assessment

Assessment requires that the clients' objectives and industry expectations are met. If the clients' objectives are narrowly defined or not representative of industry needs, it may be necessary to refer to portfolio case studies of a variety of SIS requirements to assess competency.

Oral questioning or written assessment and hypothetical situations (scenarios) may be used to assess underpinning knowledge (in assessment situations where the candidate is offered a preference between oral questioning or written assessment, questions are to be identical).

Supplementary evidence may be obtained from relevant authenticated correspondence from existing supervisors, team leaders or specialist training staff.

All practical demonstration must adhere to the safety and environmental regulations relevant to each State or Territory.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. ***Bold italicised*** wording in the performance criteria is detailed below. Add any essential operating conditions that may be present with training and assessment depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts.

Objectives may include:

- agreed client requirements
- written survey specifications.

Constraints may include:

- coverage of project
- datum
- environmental factors
- industry requirements
- legal and statutory
- financial
- resource availability
- time available.

Techniques may include:

- field procedures
- office procedures.

Geophysics methods may include:

- ground penetrating radar (GPR) acquisition
- interpretation of the data presented
- spraying targets on the ground.

Surveying data may include:

- depth
- dimension
- direction

- flow rates
- position
- slope.

- Legal and statutory standards** may include:
- local government requirements
 - national standards
 - federal and state statutes and regulations.
- OHS** may include:
- Australian standards
 - developing site safety plan
 - identifying potential hazards
 - inspecting work sites
 - training staff in OHS requirements
 - using personal protective equipment and clothing
 - using safety equipment and signage.
- Equipment required for the location of services** may include:
- GPR
 - global navigation satellite system (GNSS)
 - level
 - tape
 - theodolite
 - total station.
- Project management mechanisms** may include:
- communicating with stakeholders
 - resolving disputes
 - monitoring and adjusting key milestones.
- Contingencies** may include:
- equipment failure
 - injury to personnel
 - personnel turnover
 - observation errors
 - obstructions to project plan
 - weather.
- Targets on lines of radar** may include:
- collecting, interpreting and reporting on location of services:
 - detection using GPR and cable, locating where to spray the targets on the ground
 - mapping the location
 - mapping multiple types of features, such as services, rebar and voids
 - mapping types of features in the one area using surveying equipment and outputting data in GIS or computer-aided design (CAD).
- Measurements** may include use of:
- current meter
 - echo sounder
 - GNSS
 - level
 - tape
 - tide gauge

- total station.
- Specifications** may include:
 - detailed technical descriptions of survey data and its requirements
 - preparation of cross-sections and plans, with all information included.
- Organisational guidelines** may include:
 - appropriate timelines
 - code of ethics
 - company policy
 - final product formats
 - formal design parameters
 - legislation relevant to the work or service function
 - operational and equipment manuals
 - OHS policies and procedures
 - personnel practices and guidelines outlining work roles and responsibilities
 - requirements for data processing.
- Manufacturer specifications** may include:
 - equipment specifications
 - operator manuals.
- Legislation** may include:
 - Australian standards
 - award and enterprise agreements
 - certification requirements
 - codes of practice
 - quality assurance requirements.
- Company policy** may include:
 - internal and external communication guidelines
 - company OHS standards
 - customer service standards
 - company goals, such as mission statement
 - governance guidelines
 - guidelines on the use of equipment
 - operational manuals
 - operational plan
 - strategic plan.
- Required documentation** may include:
 - electronic or paper-based correspondence with client
 - field records
 - final report
 - records of conversation
 - survey plots
 - organisational work activity sheets.

Unit Sector(s)

Surveying and spatial information services

Custom Content Section

Not applicable.