



**Australian Government**

# **CPPSIS5061 Locate underground services in surveying practice**

**Release: 1**

# CPPSIS5061 Locate underground services in surveying practice

## Modification History

Release 1.

Replaces superseded equivalent CPPSIS5061A Locate underground services in surveying practice.

This version first released with CPP Property Services Training Package Version 3.

## Application

This unit of competency specifies the outcomes required to locate underground services in surveying practice. The unit covers using specialised surveying equipment and electronic locating and geophysics methods, such as electro-magnetic detecting and ground penetrating radar, to identify and interpret targets on lines of subterranean assets. The unit also covers project management tasks relating to scheduling, recording, monitoring and reporting work progress, and planning for risks and contingencies. The unit requires the ability to perform surveying calculations and data reductions, read and interpret Dial Before You Dig (DBYD) plans, and to output data using equipment software.

The unit supports those who work under limited supervision in a surveying team.

Licensing, legislative, regulatory or certification requirements apply to this unit in some States. This unit may also require adherence to AS5488 Classification of Subsurface Utility Information (SUI). Relevant state and territory regulatory authorities should be consulted to confirm those requirements.

## Pre-requisite Unit

Nil

## Unit Sector

Surveying and spatial information services

## Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the range of conditions.

1. Plan location processes.

1.1. Project objectives, principal work activities, and constraints are identified and documented in consultation with ***appropriate persons***.

- 1.2. Geophysics methods to locate services and spatial data requirements are determined.
  - 1.3. Details of instruments and basic surveying techniques to be used are evaluated and determined according to project objectives.
  - 1.4. Surveying equipment is selected, calibrated and verified according to manufacturer specifications.
  - 1.5. Work is scheduled to be completed within available time according to organisational requirements.
2. Carry out surveying tasks.
  - 2.1. Project management mechanisms are implemented to schedule, measure, record and report work progress according to organisational requirements.
  - 2.2. Underground services are located and required components measured and marked according to project specifications.
  - 2.3. Surveying equipment is used to collect and scrutinise spatial data to determine targets on lines of subterranean assets.
  - 2.4. Measured spatial data is reduced to project reference system for comparison with design.
  - 2.5. Measurements are validated and recorded according to project specifications, organisational requirements and standards.
  - 2.6. Problems are identified and resolved, and contingencies managed according to organisational requirements and plans.
3. Finalise location processes.
  - 3.1. Location processes are finalised and achievements reviewed against project and organisational requirements.
  - 3.2. Appropriate persons are notified of results according to organisational requirements.
  - 3.3. Documentation is completed and spatial data archived according to organisational requirements.

## Foundation Skills

This section describes the language, literacy, numeracy and employment skills essential to performance in this unit but not explicit in the performance criteria.

| Skill                         | Performance feature                                                                                                                                                                                            |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Numeracy skills to:           | <ul style="list-style-type: none"><li>conduct surveying measurements and calculations relating to depth, dimension, direction, flow rates, position and angle.</li></ul>                                       |
| Oral communication skills to: | <ul style="list-style-type: none"><li>ask questions to clarify project requirements.</li></ul>                                                                                                                 |
| Reading skills to:            | <ul style="list-style-type: none"><li>analyse graphical and technical information in cross-sections and plans</li><li>interpret and comply with DBYD plans.</li></ul>                                          |
| Writing skills to:            | <ul style="list-style-type: none"><li>record technical information in organisational documentation.</li></ul>                                                                                                  |
| Technology skills to:         | <ul style="list-style-type: none"><li>use geodetic software to output measured data.</li></ul>                                                                                                                 |
| Problem-solving skills to:    | <ul style="list-style-type: none"><li>apply risk control and contingency strategies to anticipated and identified problems</li><li>select appropriate validation methods to verify accuracy of data.</li></ul> |

## Range of Conditions

This section specifies 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. Bold italicised wording, if used in the performance criteria, is detailed below.

|                                   |                                                                            |
|-----------------------------------|----------------------------------------------------------------------------|
| <b><i>Appropriate persons</i></b> | <ul style="list-style-type: none"><li>asset owner</li></ul>                |
| must include at least             | <ul style="list-style-type: none"><li>client</li></ul>                     |
| two of the following:             | <ul style="list-style-type: none"><li>colleague</li><li>end user</li></ul> |

- engineer
- manager
- registered or qualified surveyor.

## Unit Mapping Information

CPPSIS5061A Locate underground services in surveying practice

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

# Assessment Requirements for CPPSIS5061 Locate underground services in surveying practice

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## Performance Evidence

A person demonstrating competency in this unit must satisfy the requirements of the elements, performance criteria, foundation skills and range of conditions of this unit. The person must also locate underground services in surveying practice for two different projects.

For each of the above projects, two of the following pieces of equipment must be used:

- electro-magnetic equipment
- ground penetrating radar
- global navigation satellite system (GNSS)
- level
- total station.

While locating underground services in the above projects, the person must:

- plan work activities to identify and manage potential constraints, including those relating to:
  - confined spaces
  - traffic control
  - work health and safety
- prepare for survey by analysing specifications and operating environment to ensure adequate equipment and resources
- plan and implement project management mechanisms to ensure work is completed within required timeframes and that project complies with specifications and standards, including Dial Before You Dig (DBYD) requirements
- plan and implement risk management and contingency measures, including two of the following tools and strategies:
  - DBYD
  - non-destructive digging
  - pipe and cable tracers, including transmitter and receiver
  - pipe cameras
  - sonde
- analyse electronic and radar data to determine subterranean assets

- communicate clearly with clients and stakeholders to clarify and report project information
- comply with industry-accepted standards for validating accuracy of data and identifying errors and discrepancies
- comply with organisational and legal requirements for:
  - completing records and documentation
  - recording, storing and filing data
  - using, checking and storing equipment
  - working safely to identify and control hazards and risks, including those relating to traffic control and confined spaces, and to use personal protective equipment (PPE)
- use one the following geophysics methods to locate and measure underground services and components:
  - electro-magnetic locating
  - ground penetrating radar acquisition
  - interpreting presented data, including DBYD and other relevant evidence
  - spraying targets on the ground.

## Knowledge Evidence

A person demonstrating competency in this unit must demonstrate knowledge of:

- accuracy and precision requirements for locating underground services
- data reduction and manipulation techniques
- electro-magnetic and geophysics methods used for locating underground services
- basic concepts of algebra, geometry and trigonometry that relate to locating underground services
- industry-accepted methods for validating data to identify errors and discrepancies
- legislative, statutory and industry requirements and standards relating to work tasks
- methods for identifying targets on lines of radar
- organisational policies and procedures relating to:
  - client and stakeholder communication
  - contacting relevant utility providers
  - health and safety relating to work activities
  - reporting and documentation
  - using the equipment specified in the performance evidence
- procedures for calibrating specialised surveying equipment
- project management techniques for scheduling, measuring and monitoring work progress and planning for risks and contingencies
- relevant industry standards, including AS5488 Classification of Subsurface Utility Information (SUI).

## Assessment Conditions

The following must be present and available to learners during assessment activities:

- equipment:
  - as specified in the performance evidence, including PPE
- specifications:
  - task specifications, including relevant plans and drawings
  - organisational policies, procedures and documentation relating to work health and safety
  - AS5488 Classification of Subsurface Utility Information (SUI)
- relationships with team members and supervisor:
  - working in a team.

Timeframe:

- as specified by project requirements.

### Assessor requirements

As a minimum, assessors must satisfy the assessor requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

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