

Draft 0.1

This is a draft update to CPPSIS6033 Conduct underground mine surveys
<https://training.gov.au/Training/Details/CPPSIS6033>

Changed code to CPPSUR6033

Changed PCs to active voice.

Changed 'person' to 'candidate' in PE for consistency.

Have labelled as supersedes and is equivalent to CPPSIS6033 Conduct underground mine surveys—TAG please review /confirm

Range of Conditions items moved to KE

Unit of Competency

CPPSUR6033 Conduct underground mine surveys

Modification history

Release	Comments
1	Replaces superseded equivalent CPPSIS6033A Conduct underground mine surveying. This version first released with CPP Property Services Training Package Version 3

Application

This unit specifies the skills and knowledge required to conduct underground mine surveying operations to meet client specifications. The unit covers project management activities relating to scheduling, measuring, recording, monitoring and reporting work progress; organising resources and equipment; and planning for risks and contingencies.

The unit also covers identifying projects, and organising resources and planning to support an underground mine surveying operation, including for developing headings, rock stability and ground support, loading and haulage and mine ventilation. The unit requires the ability to implement underground surveying operations using specialist equipment to measure identified components of an underground mine, capture and reduce data, and create mine drawings. The unit requires knowledge of underground mining operations and requirements to comply with standards, legislation and regulations applicable to the mining industry.

The unit supports those who work in a technical management role in an underground mining environment.

Licensing, legislative, regulatory or certification requirements apply to this unit in states where mining surveying must be undertaken under the supervision of a registered surveyor. Relevant state and territory regulatory authorities should be consulted to confirm those requirements.

Prerequisite Unit

None

Unit Sector

Surveying and spatial information services

Elements and Performance Criteria

1. Prepare for underground mine surveying.	<ul style="list-style-type: none">1.1 Identify client requirements and project specifications in consultation with appropriate persons.1.2 Plan processes and procedures involved in undertaking underground mining methods according to organisational requirements.1.3 Plan mining techniques applicable to developing headings in underground mining operations according to project objectives and organisational requirements.1.4 Determine underground mining methods for metalliferous and coal mines according to project specifications and organisational requirements.1.5 Develop project specifications that incorporate levels of rock stability, ground support, and loading and haulage requirements for underground mines.
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	1.6 Detail mine ventilation requirements for underground mines in project specifications according to organisational requirements.
2. Plan underground mine surveying operations.	<p>2.1 Identify and document surveying objectives, deliverables, constraints, work activities and surveying equipment needs according to spatial data specifications and organisational requirements.</p> <p>2.2 Implement project management mechanisms to schedule, measure, record and report progress of activities in relation to agreed schedule and plans.</p> <p>2.3 Implement and maintain agreed communication processes between client and other appropriate persons.</p> <p>2.4 Devise and follow risk management and contingency strategies to ensure project complies with legal and statutory standards and organisational requirements.</p>
3. Conduct operational elements of underground mine surveying.	<p>3.1 Measure or set out accurately identified spatial components of mine design according to project specifications.</p> <p>3.2 Reduce measured spatial data to project reference system for comparison with design.</p> <p>3.3. Create mine drawings to meet project specifications.</p> <p>3.4 Reduce and use captured data to calculate mine volumes according to project specifications.</p> <p>3.5 Validate and record measurements according to organisational requirements.</p> <p>3.6 Identify and resolve problems and manage contingencies according to organisational requirements.</p> <p>3.7 Set out underground development according to design parameters.</p>
4. Finalise and report project outcomes.	<p>4.1 Finalise and check project for compliance with project specifications and organisational requirements.</p> <p>4.2 Notify appropriate persons of project results according to organisational requirements.</p> <p>4.3 Complete documentation and archive spatial data according to project and organisational requirements.</p>

Foundation Skills

Candidates require:

- planning and organising skills to plan and prioritise work to meet contracts and resource constraints.
- numeracy skills to conduct precise measurements and calculations relating to height, depth, dimension, direction and position in actual operational activity and virtual representation.
- oral communication skills to inform clients and other stakeholders of project progress and to negotiate to meet client requirements.
- reading skills to analyse graphical and technical information in mining and engineering plans.
- writing skills to record technical information in organisational documentation.
- technology skills to connect equipment to coordinate systems and to set up and calibrate specialised surveying equipment.
- problem-solving skills to identify and resolve areas of potential non-compliance of operations with legislation, regulations and standards.

Unit Mapping Information

Supersedes and is equivalent to CPPSIS6033 Conduct underground mine surveys

[Links](#)

Companion Volume Implementation Guide:

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

Assessment Requirements for CPPSUR6033 Conduct underground mine surveys

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Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by:

- conducting underground mine surveys for two different projects.

While conducting these surveys, the candidate must:

- analyse organisational priorities and plans and drawings to identify project specifications
- prepare and document project plans and specifications that detail:
 - levels of rock stability and ground support
 - loading and haulage requirements for underground mines
 - mine ventilation requirements
 - required equipment
 - strategies for risk and contingency management
 - underground mining methods for metalliferous and coal mines
- set out underground development based on design parameters in drawings
- communicate clearly with clients and stakeholders to clarify and report project information
- comply with organisational policies and procedures, standards, regulations and legislation relating to underground mining surveying operations when planning for:
 - drainage and dewatering
 - dumps and stockpiles
 - equipment use
 - loading and haulage
 - mine ventilation and air control
 - power and lighting
 - records and reporting
 - rock stability and ground support
 - standards and quality
 - surveying tasks
 - water control and supply
 - work health and safety and mines safety requirements
- conduct underground surveying tasks to create mine drawings, and capture and reduce data to calculate mine volumes
- perform calculations to measure, reduce and validate spatial data captured from underground mine surveying
- measure survey components using two of the following pieces of equipment:
 - cavity monitoring systems
 - gyro-theodolites
 - level
 - remote sensing
 - tape
 - total station

- plan and implement project management mechanisms to ensure the underground mine surveying operation is completed within required timeframes and the project complies with specifications and standards
- work safely, using personal protective equipment (PPE) when performing surveying tasks.

Knowledge Evidence

To be competent in this unit, a candidate must demonstrate knowledge of:

- appropriate persons for clarifying requirements and project specifications:
 - client
 - colleague
 - engineer
 - manager
 - registered or qualified surveyor
 - supplier
- processes and procedures for:
 - mine access
 - mine layout
 - service provision
- underground coal mining methods:
 - long wall
 - room
 - pillar
- underground metalliferous mining methods:
 - block caving
 - cut and fill stoping and shrinkage stoping
 - sub-level caving
 - sub-level open stoping
- accuracy and precision requirements for surveying data
- data capture and set-out techniques
- data reduction and manipulation techniques
- drilling techniques:
 - applicable to blasting in mining operations
 - used for sampling rock and unconsolidated sands
- methods for developing headings in underground mining operations
- methods for ensuring adequate mine ventilation, including:
 - duties of ventilation officer for an underground mining operation
 - exposure standards for atmospheric contaminants
 - methods for measuring air velocity and determining air quantity given relevant operational data
 - properties of natural air flow
 - methods of mechanical and auxiliary ventilation
 - procedures for testing and sampling atmospheric contaminants
 - requirements for ventilation plans
 - sources of atmospheric contaminants in an underground mining environment
- mineral exploration methods, including geophysical, geochemical and geological techniques
- mining methods for metalliferous and coal mines

- organisational policies and procedures, standards, regulations and legislation relating to:
 - client and stakeholder communication
 - using equipment, as specified in the performance evidence
 - mining industry and underground mining, including:
 - mine access
 - layout development
 - service provision, such as water, air, power, lighting and dewatering
 - work health and safety and mines safety requirements
 - records and reporting
 - risk and contingency management
- phases and stages of exploration procedure and possible methods of exploration relevant to each
- project management techniques for scheduling, measuring and monitoring work progress and planning for risks and contingencies
- safe work practices in all aspects of underground mining
- specialised surveying equipment requirements and accessibility in relation to underground mining
- techniques for providing rock stability and ground support, including cable bolts and rock bolts
- terminology and nomenclature applicable to underground mining.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

Assessment must be conducted in the workplace or a simulated workplace using realistic conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Candidates must have access to:

- equipment as specified in the performance evidence, including PPE
- specifications:
- mining and surveying specifications, including relevant plans and drawings
- organisational policies, procedures and documentation relating to:
 - work health and safety
 - mining regulations
- a team in which they play a lead role.

Work must be completed within the time frame specified by project requirements.

Links

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