

Draft 0.1

This is a draft update to CPPSIS5046 Set out stormwater systems:

<https://training.gov.au/Training/Details/CPPSIS5046>.

Code changed to CPPSUR5046 Set out stormwater systems.

Changed PCs to active voice.

Reference to: 'two different projects' in first sentence of PE may be problematic at audit as no specific details provided

Changed 'person' to 'candidate' in PE.

Range of Conditions added to Knowledge Evidence.

I've added mapping info.

TAG will need to reassess this as unit is redeveloped.

Unit of Competency

CPPSUR5046 Set out stormwater systems

Modification history

Release	Comments
1	Replaces superseded non-equivalent CPPSIS5046A Design a stormwater system. This version first released with CPP Property Services Training Package Version 3.
	Replaces superseded equivalent CPPSIS5046 Set out stormwater systems

Application

This unit specifies the skills and knowledge required to set out stormwater systems and associated engineering structures using surveying methods and equipment. The unit covers using horizontal and vertical control techniques to set out marks and lines to define the position and level of design points on site. It also covers interpreting plans, maps and specifications to conduct measurements and calculations that ensure stormwater components and related engineering structures are in the correct plan position and at the correct reduced level. The unit requires the ability to measure, calculate and reduce surveying data, including fall of land and volume relating to contours, spot heights and cross-sections. It also requires the ability to check and validate measurements against specifications and complete set-out documentation.

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

No licensing, legislative, regulatory, or certification requirements apply to this unit of competency at the time of publication.

Prerequisite Unit

None

Unit Sector

Surveying and spatial information services

Elements and Performance Criteria

1. Prepare for stormwater system set-out.	<ul style="list-style-type: none">1.1 Identify and interpret project and client requirements for stormwater system.1.2 Access and analyse relevant plans, maps and stormwater specifications to identify principal work activities.1.3 Select and prepare equipment according to manufacturer specifications and organisational requirements.1.4 Plan work in consultation with appropriate persons to meet survey specifications and timeframes.
2. Use control techniques for set-out.	<ul style="list-style-type: none">2.1 Locate horizontal control points throughout the work area and set out coordinates according to plans and specifications.2.2 Set out design points from base lines by offsetting, and check positions to ensure correct tolerances according to specifications.2.3 Use primary and secondary controls and check accuracy according to plans and specifications.2.4 Use set-out pegs or markers to indicate base lines and offsets relative to the work area.

	<p>2.5 Establish vertical control points to ensure design points are positioned at correct levels according to plans and specifications.</p> <p>2.6 Put in place offsets and profiles to define the main lines of stormwater works and provide vertical controls.</p> <p>2.7 Reduce and conduct measured surveying data and calculations, including fall of land and volume, according to industry-accepted standards and organisational requirements.</p>
3. Finalise stormwater system set-out.	<p>3.1 Check measurements according to plans and specifications to ensure correct plan position and reduced level of set-out.</p> <p>3.2 Identify, address and/or report discrepancies between specifications and actual activities according to organisational requirements.</p> <p>3.3 Finalise stormwater system set-out and complete documentation according to organisational requirements.</p>

Foundation Skills

Candidates require:

- numeracy skills to:
 - perform surveying calculations relating to height, distances, slope, angles and coordinates
 - use datum and contours to calculate fall of land and volume
- oral communication skills to:
 - ask questions to clarify task requirements
 - report and discuss project information
- reading skills to:
 - interpret graphical information in plans, drawings and contour maps
- writing skills to:
 - record field notes in a format that can be interpreted by a third party
- technology skills to:
 - connect observations to coordinate systems
 - set up, calibrate and operate surveying equipment
- problem-solving skills to:
 - identify and use primary and secondary controls to improve accuracy of measurements.

Unit Mapping Information

Supersedes and is equivalent to CPPSIS5046 Set out stormwater systems

Links

Companion Volume Implementation Guide:

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

Assessment Requirements for CPPSUR5046 Set out stormwater systems

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Performance Evidence

To demonstrate competency, a candidate must meet the performance criteria of this unit by setting out stormwater systems and associated engineering structures for two different projects.

While setting out the above stormwater systems and associated engineering structures, the candidate must:

- plan work tasks by checking plans, drawings, maps, specifications and control marks
- set out marks and lines to define position and level of design points on site using two of the following pieces of equipment:
 - hand-held laser measuring device
 - global navigation satellite system (GNSS)
 - level
 - tape
 - total station
- use horizontal and vertical control techniques to position design points and markers
- measure and calculate data within industry-accepted tolerances for accuracy
- comply with manufacturer specifications when using equipment
- check measurements to ensure accuracy of plan position and reduced level of set-out and address identified discrepancies
- reduce and manipulate surveying data
- communicate clearly with others to clarify and report project information
- comply with organisational and legislative requirements for:
 - identifying hazards, using personal protective equipment (PPE), and working safely
 - recording, storing and filing data
 - setting up and using surveying equipment.

Knowledge Evidence

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

- mathematical concepts relating to algebra, trigonometry and geometry and their use in calculating spatial measurements
- methods for calculating fall of land and volume relating to:
 - contours and spot heights
 - cross-sections: mean area and end area using trapezoidal, prismoidal and Simpson's rules
 - regular objects, including cone, cylinder, pyramid, wedge, frustum and sphere
- methods for calculating surveying data and verifying its accuracy using primary and secondary controls
- methods for establishing a control network that meets specified tolerances
- methods for recording spatial data relating to set-out

- methods for setting up, levelling and calibrating equipment used to set out stormwater systems
- purpose of primary and secondary controls for set-out
- reference and coordinate systems for surveying data, including Australian Height Datum and Map Grid of Australia
- types of pegs and markers used during set-out and methods for ensuring their optimal placement on site
- types of stormwater systems and their purposes
- appropriate persons:
 - client
 - colleague
 - engineer
 - manager
 - registered or qualified surveyor.

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:
 - task specifications, drawings, maps and plans
 - organisational policies, procedures and documentation relating to work health and safety
- relationships with team members and supervisor:
 - working in a team.

Links

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