



Australian Government

Assessment Requirements for CPCPPS5026

Design rainwater collection, storage, distribution and re-use systems

Release: 1

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Modification History

- Release 1 This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.
- Supersedes and is equivalent to CPCPPS5026A Design rainwater collection, storage, distribution and re-use systems. Updated to meet the Standards for Training Packages 2012.

Performance Evidence

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

- designing, sizing and documenting the layout details for:
 - a high-rise mixed development building, and
 - a wide span project such as a school or industrial complex
- preparing plans and specifications for each of the above projects and include the following system components:
 - authority connection
 - backflow prevention requirements
 - filters
 - fixtures and fitments
 - piping systems
 - pumps
 - storage
 - water treatment
- documenting the evaluation of design parameters including rainfall, client, regulatory, manufacturer and relevant Australian Standard requirements and storage capacity for each design
- preparing plans and specifications for rainwater harvesting and re-use systems to industry standards.

Knowledge Evidence

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

- common terminology and definitions used in the design of rainwater collection, storage, distribution and re-use
- key features of work plans and specifications

- nature of materials used and effects of performance under various conditions
- organisational quality procedures and processes
- principles of technology in the design of rainwater collection, storage, distribution and re-use for residential, commercial and industrial applications to include water treatment and backflow protection of drinking and non-drinking water supply systems
- terminology and definitions used in hydraulic design
- work health and safety (WHS) requirements, including relevant statutory regulations, codes and standards
- scope of work:
 - interpreting plans and specifications
 - rainfall analysis
 - sizing and documenting layout of rainwater harvesting systems for residential, commercial and industrial applications to include water treatment and backflow protection of drinking and non-drinking water supply systems
- design requirements:
 - architectural plans
 - building specifications
 - owner requirements
 - pipework identification
 - sizing of pipework
 - backflow protection of drinking and non-drinking water supply systems
 - water treatment
 - specialist water use applications
- contamination:
 - bacterial
 - heavy metal
 - inorganic
 - odour
 - organic
 - taste
 - silt
 - viral
 - vermin
- cost-benefit analysis comparisons of:
 - design styles
 - energy costs
 - expected design life
 - labour costs
 - material costs
 - safety factors
 - speed of installation

- suitable materials
- statutory, regulatory requirements and relevant Australian Standards and codes:
 - AS/NZS 3500 Plumbing and drainage set
 - AS 2200 Design charts for water supply and sewerage
 - National Construction Code (NCC)
- manufacturer requirements:
 - material specifications
 - pipe sizing
 - pump installation
 - storage system
 - technical and trade manuals
- information gathered through desktop study to support design purposes:
 - architectural and building plans
 - developer plans
 - manufacturer data
 - building applications
 - brochures
 - forms
 - policies
 - reports
- performance requirements:
 - compliance limits for:
 - bacteria levels
 - nutrients
 - pH
 - silt control
 - vermin protection
 - overflow discharge requirements
 - requirements established using relevant Australian Standards, codes and local authority plans for:
 - cover
 - discharge
 - flow conditions
 - pipe grades
- tank types:
 - concrete
 - fibreglass
 - metal
 - polymer
 - other approved materials

- tank locations:
 - above-ground
 - in-ground
- layout of pipework systems:
 - gravity systems
 - pumped systems
 - designing to not unduly affect building integrity and aesthetic appeal
 - designing to include principles of economy, serviceability, durability and fit for use
- fittings, valves and controls:
 - backflow prevention devices
 - inspection openings
 - irrigation control systems
 - isolating valves
 - level indicators
 - pump controls
- first-flush systems:
 - electronic
 - float-activated
 - mechanical
 - volume-activated
- filtration systems:
 - overflow devices
 - sand
 - screens
 - settlement tanks
 - strainers
- water contamination solutions:
 - disinfection
 - ultraviolet
- pipe size calculations:
 - determination of flow
 - interpretation of design charts and tables
 - pipe sizing calculations
 - reduced level calculations
- materials:
 - copper (Cu)
 - polyethylene (PE)
 - polypropylene (PP)
 - polybutylene (PB)
 - unplasticised polyvinyl chloride (uPVC)

- other approved materials
- jointing methods:
 - brazing
 - compression joints
 - electrofusion welding
 - mechanical joints
 - solvent cement
 - threading
 - other approved jointing methods
- pipe support:
 - anchors
 - bedding
 - bracket spacing
 - concrete support
 - corrosion protection
 - manufacturer-recommended specific fixings
 - material requirements
 - provision for expansion
 - saddles
- pump and ancillary requirements:
 - automatic controls
 - pump duties
 - corrosion-resistant materials
 - level controls and alarms
 - pump selection and pump sizing, based on:
 - flow
 - velocity
 - lift
 - probable simultaneous demands
- installation requirements:
 - level of workmanship
 - manufacturer-recommended specific fixings
 - pipe support
 - provision for expansion
 - serviceability and access
 - pipe protection:
 - cover
 - corrosion
 - impact
 - fire rating

- rainwater re-use systems:
 - roof water collection
 - water treatment
 - pumps
 - approved drinking and non-drinking use
 - storage:
 - tanks
 - open in-ground (dam)
- methods for applying sustainability principles and concepts:
 - selecting appropriate material to ensure minimal environmental impact
 - efficient use of material
 - efficient energy usage/capital outlay comparison
 - local environment consideration
 - water efficiency
 - re-use of greywater
 - consideration of the Green Building Council of Australia rating scheme
- types of plans:
 - axonometrics
 - cross-sections
 - details
 - elevations
 - isometrics
 - sections
 - schematics produced using:
 - computer generation
 - drawing equipment
- specification:
 - backflow prevention
 - flow requirements
 - jointing
 - manufacturer requirements
 - materials
 - residual pressures
 - work health and safety (WHS)
 - specialised components
 - storage
 - support
 - testing
 - valve selection
 - water treatment

- workmanship
- testing for:
 - air pressure
 - backflow protection
 - defect inspection
 - drainage inspection
 - hydrostatic
 - performance:
 - flow
 - pressure
 - water quality
 - quality assurance (QA) audit
- commissioning schedule information:
 - balancing disposal system
 - flow and pressure adjustments
 - leak check
 - pressure test
 - pump settings
 - safety requirements
 - system certification
 - system defects
 - system flushing
 - system functions as per design
 - system purge
 - valve operation
 - ventilation
 - vermin control
- operation and maintenance manual information:
 - as installed drawings
 - certification documentation
 - maintenance schedules
 - manufacturer brochures
 - ongoing maintenance requirements
 - pump maintenance
 - regular inspections
 - results of commissioning test
 - safety management system
 - system detail, setting and operations
 - valve function
 - system operational parameter adjustments and checks:

- disinfection
- first flush devices
- pH
- silt control
- suspended solids
- water quality.

Assessment Conditions

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

This unit must be assessed in the workplace or a close simulation using realistic workplace conditions, materials, activities, responsibilities, procedures, safety requirements and environmental considerations.

Links

Companion volumes to this training package are available at the VETNet website -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>