



**Australian Government**

**Assessment Requirements for CPCSF5009  
Create detailed designs for fire systems'  
water supplies**

**Release: 1**

# Assessment Requirements for CPCSF5009 Create detailed designs for fire systems' water supplies

## Modification History

Release 1      This version first released with CPC Construction, Plumbing and Services Training Package Release 5.0.

Supersedes and is equivalent to CPCSF5009A Create detailed designs for fire systems' water supplies. 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:

- effectively applying principles relating to the design of water supplies for fire systems for four types of buildings including a:
  - commercial building
  - factory
  - residential nursing home
  - high-rise building.

## Knowledge Evidence

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

- workplace design tools and processes
- project drawings and documentation:
  - proposed water-based fire system designs
  - mechanical
  - electrical
  - hydraulic
- level of accuracy required in detailed design drawings
- naming conventions for design drawings and drawing register
- computer software functions and operation:
  - word processing
  - spreadsheet
  - email
  - internet
- relevant current legislation, codes and standards:

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- building Acts
  - building regulations
  - infrastructure supply regulations
  - the Building Code of Australia (BCA)
  - National Construction Code (NCC)
  - Australian standards for fire systems
  - international standards for fire systems
  - jurisdictional authorities in addition to the BCA and NCC
  - other fire system standards commonly required by building insurers
  - protection requirements for different buildings including:
    - low-rise buildings
    - processing building applications
    - warehouse buildings under 13.7 m high
    - warehouse buildings over 13.7 m high
    - medium-rise buildings
    - high-rise buildings (over 25 metres)
    - buildings over 50 metres in height
  - fire systems' technology and components
  - fire system water supply technology and components:
    - electric pumps
    - diesel pumps
    - tanks
    - pressure vessels
    - booster configurations
    - components for water recovery systems
  - purpose and operation of fire systems:
    - layout:
      - consideration of a range of sustainable options for producing the required water pressure for water-based fire systems
      - selection of cost-effective components and materials
      - consideration of:
        - conflict with other services
        - work health and safety (WHS) risks
        - access constraints
        - installation problems
        - aesthetic requirements
        - efficiencies to facilitate work on site and reduce labour costing
    - performance requirements
    - maintenance standards

- characteristics and limitations of products and materials used in water supplies for fire systems and issues relating to material compatibility
- construction industry terminology
- roles and responsibilities of relevant building project personnel:
  - architect
  - lead contractor
  - structural engineer
  - mechanical engineer
  - hydraulic engineer
  - electrical engineer
  - civil engineer
  - fire engineer
  - building (private) certifier or surveyor
- installation methods:
  - access requirements
  - WHS requirements
- water supplies:
  - common water sources
  - conservation requirements
  - in-ground reticulation
  - booster configurations
- fluid mechanics and hydraulics relating to:
  - water supply
  - pressure
  - tank selection
  - pressure vessels
  - pipe range
- fluid dynamics, hydraulics and the calculations required for the design of water supplies for fire systems
- sustainability requirements and ratings:
  - energy conservation
  - water conservation
- pipe fabrication methods and constraints
- mathematic principles, equations and calculation methods:
  - flow calculations, including:
    - pressure gain and loss
    - K-factors
    - Hazen-Williams equation
    - Darcy-Weisbach equation
    - Colebrook White equations and/or tables

- Manning formula and/or tables
- AS 2200 Design charts for water supply and sewerage
- computational fluid dynamics.

## 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>