



Australian Government

CPCSFS8003 Develop and submit tenders for fire systems design solutions

Release: 1

CPCSFS8003 Develop and submit tenders for fire systems design solutions

Modification History

Release 1.

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

Replaces superseded equivalent CPCSFS7003A Develop and submit tenders for fire systems design solutions.

Application

This unit of competency specifies the outcomes required to research, plan and prepare tenders for the design and implementation of cost-effective solutions for fire systems designs.

The design and implementation of fire systems occur in a competitive commercial environment. It is not sufficient to design effective and technically compliant fire system solutions for clients; it is also essential that the solutions are cost-effective and commercially competitive.

This unit of competency supports the attainment of skills and knowledge necessary to research, plan, cost and tender for the design, fabrication and installation of efficient, effective and compliant fire detection and suppression systems.

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

Pre-requisite Unit

Nil

Competency Field

Fire system design

Unit Sector

Plumbing and 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.

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|----|--|------|--|
| 1. | Research fire system component capacities and costs. | 1.1. | Proposed tender documentation and drawings are fully scrutinised and assessed. |
| | | 1.2. | Legislation, codes and standards relevant to possible proposal or bid are researched . |
| | | 1.3. | Research is conducted to identify capacity, performance characteristics and cost of component options for the range of appropriate fire detection and suppression solutions . |
| | | 1.4. | Cost-benefit and efficiency analyses of the range of suitable fire detection and suppression systems are conducted. |
| | | | |
| 2. | Prepare estimate of labour costs. | 2.1. | Skill profiles and number of personnel required to design and install the proposed fire system are identified. |
| | | 2.2. | Options for securing required personnel are analysed. |
| | | 2.3. | Types and numbers of appropriate on-site personnel are identified and their time required on site is estimated. |
| | | 2.4. | Labour costs are calculated with allowance for the full range of on-costs and cost changes during life of the project. |
| | | | |
| 3. | Prepare estimate of material costs. | 3.1. | Quantities of selected fittings and materials are calculated. |
| | | 3.2. | Cost estimates for the purchase and fabrication of project's fittings and materials from internal and external suppliers are negotiated, secured and analysed. |
| | | 3.3. | Cost estimates for the use, purchase or hire of required plant or equipment to support proposed design and installation process are negotiated, secured and analysed. |
| | | | |
| 4. | Prepare estimate of other project costs and margins. | 4.1. | Overhead costs are identified and estimated for the project. |
| | | 4.2. | Required profit margin is identified in line with organisational strategic requirements and policies. |

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|----|---|------|---|
| 5. | Prepare business proposal or tender. | 5.1. | Total project resource requirements and costs are analysed and synthesised for inclusion in business proposal or tender. |
| | | 5.2. | Business proposal or tender submission is analysed to ensure compliance with requirements. |
| | | 5.3. | Legal, financial and accounting expertise is sought in preparing the business proposal or tender as required and in line with organisational policies and procedures. |
| | | 5.4. | Business proposal or tender is finalised in line with organisational policies and procedures and project brief requirements. |
| | | | |
| 6. | Finalise and support the proposal or bid process. | 6.1. | Business proposal or tender is submitted within required timeframe. |
| | | 6.2. | Responses are provided to potential client's queries in a professional manner and in line with organisational policies and procedures. |
| | | 6.3. | Negotiations regarding proposed services, timelines and price are conducted as required in a professional manner and in line with organisational policies and procedures. |
| | | 6.4. | Business proposal or tender bid process is finalised in line with organisational policies and procedures. |

Foundation Skills

This section describes core skills that are essential to performance and not explicit in the performance criteria. Employment skills essential to performance are explicit in the performance criteria of this unit of competency.

Skill

Performance feature

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|---------------------|---|
| Learning skills to: | <ul style="list-style-type: none"> • attempt complex tasks requiring sophisticated conceptualisation and analysis over an extended period and employ lateral thinking and problem solving strategies • select and use a range of ICT tools for administration, estimation, costing and research • research and evaluate competing technologies in new products and |
|---------------------|---|

This section describes core skills that are essential to performance and not explicit in the performance criteria. Employment skills essential to performance are explicit in the performance criteria of this unit of competency.

Skill	Performance feature
	systems • update knowledge of products, software systems and technology.
Numeracy skills to:	• interpret and apply mathematical principles, equations and calculation methods when developing content for inclusion in proposals or tenders for fire systems design solutions • read, measure and interpret dimensions, ratios and scales on drawings.
Oral communication skills to:	• lead and participate in project meetings and consultations with a range of service contractors • negotiate outcomes in discussions at times involving conflicting perspectives, including contract price negotiation.
Reading skills to:	• use a range of reading strategies to maintain comprehension when accessing, reading and interpreting current relevant legislation, codes and standards • recognise distinguishing structures, layout and features, and conventions of complex texts and drawings and use these to locate information in project documentation, including drawings, plans and specifications.
Writing skills to:	• prepare tender documentation with content organised in a clear and logical structure and using technical vocabulary and explanations where required.

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.

Documentation and drawings must include:

- architectural
- electrical

- fire engineer's or estimator's specifications
- hydraulic
- mechanical
- structural.

Legislation, codes and standards applicable to the project type must include:

- those applicable to the project type, class and location, including:
 - building Acts and regulations
 - infrastructure supply regulations
 - Australian standards for fire systems
 - international standards for fire systems
 - National Construction Code
 - other fire system standards commonly required by building insurers, including the United States National Fire Protection Association (NFPA) standards.

Research must include one or more of the following:

- attending industry workshops and conferences
- attending vendor presentations and displays of new fittings and components
- participating in professional associations
- reviewing industry websites
- subscribing to and reading professional journals.

Fire detection and suppression solutions must include at least two systems from of the following list:

- chemical systems
- detection and warning systems
- foam systems
- gaseous agent systems
- water spray systems
- water-based systems.

Options for securing personnel must include consideration of:

- contracting external personnel
- recruiting new personnel
- selecting existing team members.

Overhead costs apportioned to the project must include:

- cost of financing the project
- cost of seeking approvals and lodging designs
- environmental protection agency fees
- external consulting costs.

- other business insurances
- professional indemnity insurance
- travel costs
- waste management site fees
- WorkCover costs.

Unit Mapping Information

CPCSFS7003A Develop and submit tenders for fire systems design solutions

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>

Assessment Requirements for CPCSFS8003 Develop and submit tenders for fire systems design solutions

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Performance Evidence

A person demonstrating competency in this unit must satisfy all of the elements, performance criteria and foundation skills of this unit. The person must research, plan, cost and tender for the design, fabrication and installation of efficient, effective and compliant fire detection and suppression systems for two different fire systems design projects.

In particular, for each project the person must:

- accurately calculate:
 - fire system capacities and performance
 - costs of design, fabrication and installation of fire systems, including overhead costs
- read and interpret a range of design documents, including concept briefs, design briefs, drawings, plans and specifications
- apply requirements of legislation, codes, standards, regulatory and insurance requirements relevant to fire systems design projects, including Australian and United States National Fire Protection Association (NFPA) standards when developing tenders for the design, fabrication and installation of fire systems
- research appropriate fire detection and suppression systems
- prepare tender or bid documentation that meets the bid specification requirements
- build relationships with potential clients and suppliers, and conduct business negotiations.

Knowledge Evidence

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

- characteristics and limitations of products and materials used in fire systems and issues relating to material capability
- fire detection and suppression systems, components and technologies and costs associated with their design, purchase or fabrication, and installation
- fire systems' technology and components:
 - water-based systems
 - detection and warning systems
 - special hazard fire systems

- chemical systems
- industry networks and mechanisms for expanding and updating knowledge of fire systems and technologies
- interconnection of fire systems:
 - cause and effect matrix
 - interface with other services
- legislation, codes, standards, regulatory and insurance requirements that apply to each of the two fire systems design projects specified in the performance evidence, including Australian and NFPA standards
- mathematical principles, equations and calculation methods to inform the development of tender proposals for fire systems design solutions, including:
 - taking accurate measurements
 - financial calculations:
 - labour costs
 - overheads
 - profit margins
 - water-based system calculations:
 - dimensions
 - motor output
 - pipe lengths
 - piping friction loss
 - pump capacity
 - electrical system calculations:
 - battery back-up
 - battery capacity
 - dimensions
 - power supplies
 - voltage drops
- passive fire safety elements:
 - identification of passive elements
 - impact of fire systems design on passive elements
 - specifications required to safeguard integrity of passive fire element performance where penetrations are necessitated by the fire systems design
- range of design documents, including concept briefs, design briefs, drawings, plans and specifications and the meaning of symbols, notations and technical language used
- tendering, bidding and contractual processes, including interpreting:
 - bid requirements
 - contractual requirements.

Assessment Conditions

Assessment must be conducted in the workplace or a close simulation of the workplace.

Suitable assessment of performance would require:

- equipment:
 - computer with internet and email access
 - software: word processing and spreadsheet functionality; and proprietary estimating
- materials:
 - access to current legislation, codes and standards relevant to the jurisdiction in which the work is taking place, including:
 - building Acts and regulations
 - infrastructure supply regulations
 - Australian standards for fire systems
 - National Construction Code
 - other fire system standards commonly required by building insurers, including NFPA standards
 - organisational policies and procedures:
 - strategic planning policies
 - legal, financial and accounting procedures relating to response to tenders
 - project documentation for two fire systems design projects, including design briefs, design drawings, specifications and product information.

Assessor requirements

Assessors must satisfy the assessor requirements in the Standards for Registered Training Organisations (RTOs) current at the time of assessment.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=7e15fa6a-68b8-4097-b099-030a5569b1ad>