Title	**Demonstrate knowledge of special hazards fire detection and alarm systems and installation practices**		
Level	**4**	**Credits**	**20**

Purpose	This unit standard is for the training of fire alarm technicians and covers knowledge of operating principles and installation practices of special hazards fire detection and alarm systems. People credited with this unit standard are able to demonstrate knowledge of: • legislation, standards, and codes relevant to the installation of special hazards fire detection and alarm systems. • input and output devices for special hazards fire detection and alarm systems. • conventional control equipment for special hazards fire detection and alarm systems. • addressable special hazards fire detection and alarm systems. • special hazards fire detection and alarm systems. • wiring requirements and procedures for special hazards fire detection and alarm systems.

Classification	Mechanical Engineering > Fire Detection and Alarm Systems

Available grade	Achieved

Guidance Information

1 Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:
Building Act 2004,
Electricity Act 1992,
Electricity (Safety) Regulations 2010,
Ministry of Business, Innovation and Employment (MBIE) *Acceptable Solutions (AS) and Verification Methods (VM)*,
New Zealand Building Code,
AS/NZS 3000:2018, *Electrical Installations* (known as the Australian/New Zealand Wiring Rules),
NZS 4512:2021, *Fire Detection and Alarm Systems in Buildings*.

2 Definitions

Fire detection and alarm system refers to an installation of apparatus, which performs specified fire related functions in response to the operation of a detector, manual call point, or other input. It includes – manual call points, detectors, control and indication equipment, alerting devices, interconnections, fittings, labels, energy sources, and remote signalling devices and may include emergency warning and intercommunication systems (EWIS) where applicable.

Special hazards fire detection and alarm system refers to fire detection and alarm systems which apply electrical actuation to operate mechanical extinguishing systems. It includes water based, chemical, and clean agent gas flood installations.

Standards refer to NZS 4512:2021, ANS/NZS 3000:2018 and to standards relevant to special hazards systems.

Systems documentation refers to the documentation required to be maintained by NZS 4512:2021 and other relevant standards, including logbook, test reports, equipment details and drawings, specifications, contract agreement, software configurations and versions, additions and alterations, fire reports, building consents standards, codes of practice, installation instructions, test and commissioning procedures, test and maintenance records.

Workplace procedures refer to the documented procedures used by the organisation carrying out the work and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site safety procedures, equipment operating procedures, codes of practice, quality assurance procedures, housekeeping standards, charging of time and materials, management of drawings, and documentation, procedures to comply with legislative and local body requirements.

3 Assessment

a. Use of NZS 4512:2021 and AS/NZS 3000:2018 by candidates during assessment is encouraged.
b. All activities must comply with relevant legislative and/or regulatory requirements and recognised codes of practice.
c. All activities must demonstrate safe working practices.
d. All activities must be completed and reported within agreed timeframes.
e. All activities must be done in accordance with applicable systems documentation, device specifications, workplace procedures, and standards.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of legislation, standards, and codes relevant to the installation of special hazards fire detection and alarm systems.

Performance criteria

1.1 Acts, regulations, standards, and codes relevant to the installation of special hazards fire detection and alarm systems are identified and the purpose of each is stated.

1.2 The relationships between acts, regulations, standards, and codes relevant to special hazards fire detection and alarm system installation are outlined.

Outcome 2

Demonstrate knowledge of input and output devices for special hazards fire detection and alarm systems.

Range input and output devices – conventional, addressable.

Performance criteria

2.1 Principles of operation of devices are explained.

2.2 Installation procedures and requirements for devices are identified and described.

Outcome 3

Demonstrate knowledge of conventional control equipment for special hazards fire detection and alarm systems.

Performance criteria

3.1 Principles of operation of control equipment are explained with reference to functional units, input and output devices, adjustments, and maintenance facilities.

3.2 Installation procedures and requirements for control equipment are identified and described.

3.3 Block schematics for typical control systems are sketched showing functional units, input and output devices, and power supplies.

Outcome 4

Demonstrate knowledge of addressable special hazards fire detection and alarm systems.

Performance criteria

4.1 Principles of operation of addressable systems are explained with the aid of block schematic diagrams, and with reference to functional units, protocols, and features including programme access, storage, and maintenance facilities.

4.2 Differences in installation practices compared to conventional systems are identified.

Outcome 5

Demonstrate knowledge of special hazards fire detection and alarm systems.

Range gas flood systems, pre-action, deluge.

Performance criteria

5.1 Principles of operation of control panels are explained with reference to functional units, input and output devices, adjustments, and maintenance facilities.

5.2 Block schematics of typical systems are sketched showing functional units, input and output devices, power supplies and any interfaces with other building services and systems.

5.3 The operations of stage one and stage two alarms are described.

5.4 Precautions and health and safety aspects that need to be considered prior to commencement of testing systems are identified and described.

Outcome 6

Demonstrate knowledge of wiring requirements and procedures for special hazards fire detection and alarm systems.

Performance criteria

6.1 Cables used in conjunction with special hazards fire detection and alarm systems are identified.

Range cables – power cables, cables for input and output devices.

6.2 The requirements of AS/NZS 3000:2018 and NZS 4512:2021 in relation to cabling of special hazards fire detection and alarm systems are identified.

Planned review date	31 December 2029

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	15 October 2015	31 December 2026
Review	2	27 June 2024	N/A

Consent and Moderation Requirements (CMR) reference	0013

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact the Hanga-Aro-Rau Manufacturing, Engineering and Logistics WDC qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.