

<b>Title</b>	<b>Demonstrate knowledge of installation practices and procedures for telecommunications network equipment</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>10</b>

<b>Purpose</b>	<p>This unit standard is intended for technicians who require basic knowledge of telecommunication networks.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> <li>– demonstrate knowledge of regulatory requirements for installations;</li> <li>– demonstrate basic knowledge of cabling and cable support installation practice;</li> <li>– demonstrate knowledge of installation requirements for telecommunications equipment;</li> <li>– demonstrate basic knowledge of power systems used in telecommunications installations; and</li> <li>– demonstrate knowledge of commissioning telecommunications installations.</li> </ul>
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<b>Classification</b>	Telecommunications > Telecommunications - Service Delivery
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<b>Available grade</b>	Achieved
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## Guidance Information

- 1 Learning and assessment within this unit standard must be carried out in accordance with the following legislation, guidelines, and codes of practice, as relevant to role, and any subsequent amendments:
  - Electricity Act 1992;
  - Health and Safety at Work Act 2015;
  - Privacy Act 1993;
  - Resource Management Act 1991;
  - Telecommunications Act 2001;
  - Building Regulations 1992, all available from <http://legislation.govt.nz/>;
  - New Zealand Telecommunications Forum Inc., *Customer Complaints Code*, available from <https://www.tcf.org.nz/industry/resources/publications/industry-standards-guides/>;
  - AS/NZS 3000:2007– *Electrical installations* (known as the Australia/New Zealand Wiring Rules), available from <http://www.standards.govt.nz/>;
  - New Zealand Electrical Codes of Practice, available from [www.worksafe.govt.nz](http://www.worksafe.govt.nz).
- 2 Definitions
 

*Basic knowledge* refers to some operational and theoretical knowledge of the subject matter to interpret available information.

*Industry practice* refers to those practices that competent practitioners within the industry recognise as current industry best practice.

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## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of regulatory requirements for installations.

#### Performance criteria

1.1 New Zealand Acts of Parliament are explained in terms of the impact on telecommunications equipment installations.

Range impacts may include but are not limited to – requirements for registration, requirement to seek consent, rights of entry, notice to be given before work is undertaken.

1.2 Regulations contained in the relevant Acts are explained in terms of the requirements for telecommunications equipment installations.

Range Regulations – local council regulations, Electricity (Safety) Regulations, Resource Management (National Environmental Standards for Telecommunications Facilities) Regulations, Building Regulations;  
requirements may include but are not limited to – electrically safe, compliant with AS/NZS 3000: 2007, prescribed electrical work, penalties, wall penetration requirements, seismic strength, load bearing, fire stopping, permitted hole sizes in structural materials, electromagnetic emissions (EME) requirements, noise limits, protection of trees and vegetation, protection of heritage sites, antenna installation and replacements, water disbursement.

1.3 Industry Standards and Codes of Practice are explained in terms of acceptable solutions as tools to assist in compliance with Acts and regulations.

Range AS/NZS 3000: 2007, Telecommunications Carriers' Forum, Electrical Codes of Practice.

1.4 Site conditions are explained in terms of regulatory requirements when performing installations.

Range site conditions may include but are not limited to – moisture ingress, water disbursement, insect and vermin ingress, corrosion, ventilation, equipment protection, cable protection, lightning protection, notifiable substances.

### Outcome 2

Demonstrate basic knowledge of cabling and cable support installation practice.

**Performance criteria**

- 2.1 Common telecommunications cables for a given application are explained in terms of their suitability and in accordance with industry practice.
- Range cables – copper, coaxial cable, fibre, waveguide; applications may include but are not limited to – customer premises equipment (CPE), broadcasting, radio systems, access network, core network, signals and communications.
- 2.2 Colour coding or labelling to identify cables or cable pairs is explained in terms of the use in telecommunications cabling.
- Range copper, coaxial cable, fibre, waveguide.
- 2.3 Termination methods for common telecommunications cables, including any specialist tools are explained in accordance with industry practice.
- Range cables – copper, coaxial cable, fibre, waveguide; terminations may include but are not limited to – wire wrap, solder, crimp, DB connectors, internal displacement connectors, co-axial connectors, RJ connectors, fibre connectors, fibre fusion splicing.
- 2.4 Methods employed to join telecommunications cables are explained in terms of their limitations.
- Range copper, coaxial cable, fibre, waveguide.
- 2.5 Cable support systems installation practices are explained in accordance with industry practice.
- Range support systems – cable tray, ladder rack, trunking, conduit, catenary wire, aerial support systems; mounting hardware – fittings, fixtures, fastenings.
- 2.6 Management practices for telecommunications cable support systems are explained in accordance with industry practice.
- Range support systems may include but are not limited to – cable tray, ladder rack, trunking, conduit, aerial, buried; management practice may include but is not limited to – bend radius, securing, grounding, bonding, labelling, separation of services, diversity routes, cable handling techniques.

**Outcome 3**

Demonstrate knowledge of installation requirements for telecommunications equipment.

**Performance criteria**

- 3.1 Frames/cabinets are identified in terms of their suitability for a given application.
- Range cabinets racks, frames, construction, seismic suitability, suitability for loads.
- 3.2 Equipment installation practices are explained in accordance with industry practice.
- Range locations – equipment room/closet, patch-panels, cabinets, pedestals;  
mounting methods – wall mount, pole mount, plinth, rack mount;  
other considerations – electrical isolation, dissimilar metals, seismic suitability, dust control during installation.

#### Outcome 4

Demonstrate basic knowledge of power systems used in telecommunications installations.

##### Performance criteria

- 4.1 Types of power systems and their purpose are explained in terms of telecommunications installations.
- Range direct current (d.c.) power, alternating current (a.c.) power, battery backup, renewable energy, inverters, uninterruptable power supply (UPS).
- 4.2 Protection devices used in telecommunications installations are explained in terms of their application.
- Range earthing, circuit breakers, fuses, thermal overloads, surge protection, lightning protection, static protection.
- 4.3 Termination methods are explained in terms of extra low voltage power cables.
- Range pillar and post, crimp lug, terminal blocks, polarity, plug and socket.

#### Outcome 5

Demonstrate knowledge of commissioning telecommunications installations.

##### Performance criteria

- 5.1 Commissioning tests are explained in terms of the factors that can influence the results.
- Range safety, performance, harm to equipment, damage to cabling, incorrect function, compliance, warranties.
- 5.2 Common commissioning testing is explained in terms of visual inspections, polarity, function, end to end testing, remote control and access.

- 5.3 Collection of information is explained in terms of what is required before handover of installation.

<b>Planned review date</b>	31 December 2022
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#### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 July 2013	N/A
Rollover and Revision	2	23 November 2017	N/A
Rollover and Revision	3	27 June 2019	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0101
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

#### Comments on this unit standard

Please contact Connexis - Infrastructure Industry Training Organisation [qualifications@connexis.org.nz](mailto:qualifications@connexis.org.nz) if you wish to suggest changes to the content of this unit standard.