

Title	Install, maintain and repair telecommunications optical fibre network infrastructure		
Level	3	Credits	25

Purpose	<p>This unit standard is intended for technicians who require basic knowledge of optical fibre telecommunication networks.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – read, interpret, and mark up telecommunications outside plant plans – apply knowledge of the structure and properties of ducts and cable installations – install telecommunications aerial, underground, surface mount and internal optical fibre cables – splice optical fibre cables – terminate optical fibre telecommunications cables – test and fault-find telecommunications cables – install internal optical fibre cables and structured data cabling – handover telecommunications optical fibre plant and equipment to customer.
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Classification	Telecommunications > Telecommunications - Service Delivery
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Available grade	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:
 - New Zealand Telecommunications Forum Inc., *Customer Complaints Code*, available from <https://www.tcf.org.nz/industry/resources/publications/industry-standards-guides/>
 - Health and Safety at Work Act 2015
 - Privacy Act 2020
 - Resource Management Act 1991
 - Telecommunications Act 2001, all available from <http://legislation.govt.nz/>.
- 2 Definitions

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

Customers refer to those internal or external to the organisation and may include end customers and clients of the organisation.

Industry practice refers to those practices, which competent practitioners within the industry recognise as current industry best practice, including standard operating procedures.

Installation refers to the installer who is supplied with design specifications and/or detailed instructions regarding the installation. Installation excludes system design or layout, contract negotiations, or commissioning and operational configuration adjustments required in complex network installations.

OFDF refers to optical fibre distribution frame which is a frame used to provide cable interconnections between communication facilities, and can integrate fibre splicing, fibre termination, fibre optic adapters and connectors and cable connections together in a single unit.

Outside plant refers to the telecommunications network which generally extends from exchange switch to the point of entry at customers' premises.

Specifications refer to detailed job specifications, plans, and instructions; manufacturers' specifications and instructions; and industry codes of practice relating to the type of cabling system being installed.

Telecommunications outside plant plans refer to the fundamental components which make up telecommunications customer access networks excluding the more complex equipment and complete or end-to-end systems.

3 Recommended unit standard for entry

Unit 27913, *Demonstrate basic knowledge of telecommunications concepts*.

Outcomes and performance criteria

Outcome 1

Read, interpret, and mark up telecommunications outside plant plans.

Range underground network plans, fibre optic grid plans, cable distribution plans, schematics.

Performance criteria

1.1 Plans are read and interpreted in terms of the network elements and plant locations they represent, in accordance with industry practice.

Range network elements may include but are not limited to – cable distribution, jointing details, cable types and sizes, details of jointing chambers, cabinets, enclosures, optical fibre distribution frames.

1.2 Plans are marked up to reflect changes and existing and proposed items are clearly identified in accordance with industry practice.

Outcome 2

Apply knowledge of the structure and properties of ducts and cable installations.

Performance criteria

- 2.1 The use of micro ducts is demonstrated in accordance with industry practice.
- Range terms of installation, jointing, stripping, management, bend radius, and enclosures.
- 2.2 The blowing of fibre using micro ducts is demonstrated in accordance with industry practice.
- 2.3 The installation duct or cable in the ground is demonstrated in accordance with industry practice.
- Range may include but is not limited to – trench, haul, micro trench, mole plough.
- 2.4 The installation of aerial lead-ins is explained in terms of the methods and fittings used.

Outcome 3

Install telecommunications aerial, underground, surface mount and internal optical fibre cables.

Range two installations for each of the four types of optical fibre cable.

Performance criteria

- 3.1 Materials are purchased or obtained from stock and assembled on site in accordance with company practice.
- 3.2 Permissions and/or permits are located and explained in terms of the access to site and/or infrastructure.
- 3.3 Pole mounted hardware is installed in accordance with specifications and industry practice.
- 3.4 Aerial, underground, external and internal cable is installed in accordance with specifications and industry practice.

Outcome 4

Splice optical fibre cables.

Performance criteria

- 4.1 Splicing materials and tools are drawn from stock or purchased in accordance with job specifications and instructions and assembled on site.
- 4.2 Site is prepared for splicing in accordance with job requirements and industry practice.

- 4.3 Cables are stripped and prepared for splicing in accordance with specifications and industry practice.
- 4.4 Fibres are identified, spliced, and managed in accordance with specifications and industry practice.
- 4.5 Optical fibre safety rules are followed during all aspects of splicing, waste fibre scraps are stored correctly and disposed of in accordance to industry practice.
- 4.6 Fibre enclosure is closed, sealed and secured in accordance with specifications and industry practice.
- 4.7 Site is reinstated and left safe and secure in accordance with industry practice.

Outcome 5

Terminate optical fibre telecommunications cables.

Range present on a frame or terminate to connectors.

Performance criteria

- 5.1 Materials are purchased or obtained from stock and assembled on site in accordance with company practice.
- 5.2 Site is prepared in accordance with job requirements and industry practice.
- 5.3 Cables are installed stripped and prepared for termination in accordance with specifications and industry practice.
- 5.4 Fibres are identified and spliced in accordance with specifications and industry practice.
- 5.5 Fibres are managed correctly with minimum radius bends being observed on all fibre connection trays.
- 5.6 Cable entries and cable ends are sealed in accordance with specifications and industry practice.
- 5.7 Testing confirms signal or power levels in accordance with specifications and network requirements.
 - Range correct use of testing instruments, discrepancies from specification investigated and resolved, commissioning test records are completed.
- 5.8 Site is reinstated and left safe and secure in accordance with industry practice.

Outcome 6

Test and fault-find telecommunications cables.

Performance criteria

- 6.1 Acceptance tests for a cable installation are completed in accordance with specification and industry practice.
- 6.2 Testing establishes the location of optical faults using optical test equipment.
- 6.3 Faults are identified and located by logical interpretation of test results and rectified in accordance with industry practice.

Outcome 7

Install internal optical fibre cables and structured data cabling.

Performance criteria

- 7.1 Materials are purchased or obtained from stock and assembled on site in accordance with company practice.
- 7.2 Inspection confirms that site preparation has been completed in accordance with specifications and are suitable for placement of the cable.

Range inspection may include but is not limited to – building penetrations, cable entry, reinstatement.
- 7.3 Terminating hardware, and protective devices where fitted, are installed in accordance with specifications and industry practice.

Outcome 8

Handover telecommunications optical fibre plant and equipment to customer.

Performance criteria

- 8.1 Plant and equipment is made available to the customer by the agreed date, and, in cases where it impacts upon a network or larger system, plans for the commissioning are agreed with the customer.
- 8.2 Handover documentation is completed in the agreed format, in accordance with customer and company requirements.
- 8.3 Job is closed off and plans and documentation submitted in the agreed format, in accordance with customer and company requirements.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	28 September 2017	N/A
Rollover and Revision	2	27 June 2019	N/A
Rollover and Revision	3	25 January 2024	N/A

Consent and Moderation Requirements (CMR) reference

0101

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

Comments on this unit standard

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council qualifications@waihangaararau.nz if you wish to suggest changes to the content of this unit standard.