ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule (Release 3)

Unit code	ICTCBL247
Unit title	Install, maintain and modify customer premises communications cabling: ACMA Open Rule (Release 3)
Application	This unit describes the skills and knowledge required to safely install, maintain and modify customer premises communications cabling according to the Australian Communications and Media Authority (ACMA) 'open' Cabling Provider Rules for small installations connected to sockets, and larger commercial and industry installations involving many lines, multi-pair cables, backbone cabling, multi-story buildings and advanced termination modules and distributors. It applies to individuals who provide services in telephony, carrier modems or multiplexers, private modems or data systems operating over a category one or two twisted pair metallic customer cable in a specific customer location. Individuals may install, maintain or modify new cable or upgrade cable capacity either, indoor, external, underground or aerial cabling on private and public property for an existing network or subsystem, or cabling infrastructure for convergence to next generation networks (NGNs). Licensing, legislative, regulatory and certification requirements apply to telecommunications systems. All customer cabling work in the telecommunications, fire, security and data industries must be performed by a registered cabler. All cablers are required to register with an ACMA accredited registrar. Where aerial and underground cabling are used to supply services to the public, the specialist competencies as indicated in the ACMA Cabling Provider Rules – Pathways to cabling registration publication must be attained to undertake that work.
Pre-requisite unit	ICTTEN208 Use electrical skills when working with telecommunications networks ICTWHS204 Follow work health and safety and environmental policy and procedures
Competency field	Nil
Unit sector	Telecommunications – Cabling

Elements	Performance criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Plan open cabling.	1.1. Identify building infrastructure that places critical constraints on cabling. 1.2. Apply organisational strategies to manage other infrastructure in relation to cabling. 1.3. Notify appropriate personnel of identified safety hazards at cabling worksite.
2. Manage remote power feed.	2.1. Identify and avoid risks posed by contact with remote power feeding services when performing cabling activity. 2.2. Make site safe by identifying remote power feeding services that operate at above telecommunications network voltage (TNV) inside customer premises.
3. Install and modify cable support, earthing and termination infrastructure.	3.1. Install fixings and cable support structures of adequate strength, safely and aligned with the environment according to manufacturer and customer specifications. 3.2. Secure catenary supports to building structure and tension, as required, to ensure cable weight can be carried in operating conditions with interference and safety segregation maintained according to current Communications Alliance Standards. 3.3. Install protective earthing of metal work to industry standards, as required. 3.4. Inspect installed support structure to ensure cable will not be exposed to damage during installation and general operation. 3.5. Position terminating equipment and fixing according to industry codes of practice, standards and customer requirements. 3.6. Inspect back-mount and outlet layout for compliance to manufacturer specifications, and allow adequate work space for ease of access and avoid overlaying. 3.7. Segregate incoming and outgoing cables for ease of access and avoid overlaying.
4. Install cables and earth wires.	4.1. Install cables according to manufacturer specifications, including tension and bending stress requirements.

	4.2. Identify and avoid sources of possible damage to cable, including hot pipes, sharp edges, cable burn, kinks, crushing or stretching. 4.3. Allow sufficient excess at cable ends to facilitate termination. 4.4. Label telecommunication outlet ends of cable uniquely to match identifier at originating location. 4.5. Place and secure cable to maintain safety and interference segregation according to legislative and industry standards. 4.6. Install cable fasteners with correct tension, and trim or fit them flush to prevent cable sheath damage, transmission impairment or risk of personal damage. 4.7. Use appropriate aerial cable installation techniques associated with supported catenaries in external environment to meet minimum above ground clearances and segregation from hazardous electrical services, according to current Communications Alliance Standards. 4.8. Use appropriate underground cable installation techniques associated with minimum depth of cover and segregation from hazardous electrical and other services, according to current Communications Alliance Standards. 4.9. Identify issues surrounding underground cables (excluding blown fibre tube systems) to incorporate a blocking agent within the cable to prevent the ingress of water. 4.10. Install over-voltage protection devices to all cable pairs according to current Australian Standards, as required, to suppress voltage surges with the over-voltage devices connected to protective earth 4.11. Conduct a visual inspection to verify telecommunications reference conductor (TRC) / communications earthing system (CES)/earth wire insulation is protected against damage and is segregated according to relevant industry, legislative and Communications Alliance Standards.
5. Terminate and test cables and earth wires.	5.1. Remove cable sheath to allow for correct termination length without damage to underlying conductors and their insulation. 5.2. Install terminating modules to different telecommunications cables according to manufacturer specifications, and cable pairs neatly and sequentially fan for termination.

	5.3. Terminate conductors according to recommended colour code sequence using appropriate termination tools according to manufacturer specifications. 5.4. Earth cable shield, as required, according to manufacturer specifications, relevant industry codes of practice and current Communications Alliance Standards. 5.5. Conduct visual inspection to confirm termination colour code sequence has been followed prior to end-to-end testing of wire and pair termination integrity. 5.6. Terminate earth wires with connectors recommended by manufacturer according to industry codes of practice and current Communications Alliance Standards. 5.7. Ensure earth wire continuity throughout and observe interface requirements with electrical systems. 5.8. Test earthing installation for continuity and conductive resistance according to industry standards. 5.9. Confirm compatibility of alterations with existing systems and test new work both in isolation and when integrated with existing systems. 5.10. Conduct testing of installed cable continuity after termination.
6. Inspect cable route to ensure correct separations.	6.1. Inspect separations along the entirety of the cable route and rectify separations that do not comply with regulations. 6.2. Install barriers to achieve separations where sufficient spatial separation cannot be met.
7. Evaluate earthing needs for cable systems on customer premises.	7.1. Locate existing earthing systems in customer premises and analyse earthing needs of cable products. 7.2. Calculate upper and lower limits of resistance for a variety of cable system earths using relevant cable characteristics.
8. Label earthing systems.	8.1. Identify label requirements for telecommunications earthing systems. 8.2. Attach label to earthing systems according to industry regulations.
9. Create or update cable plans and records.	9.1. Document installation details on record sheets and plans, and store according to customer requirements. 9.2. Label cable pairs clearly as required to provide an accurate identification according to manufacturer specifications, industry standards and customer requirements.

	9.3. Record cabling details in cable pair record books to provide an accurate record, according to industry codes of practice and current Communications Alliance Standards. 9.4. Complete telecommunications cabling advice (TCA) forms.
10. Monitor work activity.	10.1. Supervise unregistered cablers undertaking work in line with scope of own role and organisational procedures. 10.2. Ensure installation and maintenance activity comply with legislative requirements and industry standards for safety and network integrity.

Foundation skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance, but not explicit in the performance criteria.

Reading	• Recognises the structures and distinguishing features of a range of familiar text types
Writing	• Sequences writing to produce cohesive text and uses layout consistent with text type
Oral Communication	• Demonstrates awareness of choices for register, especially in situations that are familiar
Numeracy	• Interprets and comprehends whole and familiar or routine fractions, decimals and percentages when measuring and preparing cables for installation
Navigate the world of work	• Takes personal responsibility for adherence to legal/regulatory responsibilities relevant to own work context, and draws attention to any issues that may affect self or others
Get the work done	• Implements actions as per plan, making slight adjustments if necessary, and addressing some unexpected issues • Automatically implements standard procedures for routine decisions in response to familiar problems

Unit mapping information	ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule (Release 3) is **equivalent** to ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule (Release 2) Assessment requirements, Knowledge Evidence list updated to include the current legislative reference: Communications Alliance Standards AS/CA S009 Installation Requirements for customer cabling (Wiring Rules).
Links	Information and Communications Technology Companion Volume Implementation Guide

Assessment Requirements

Title	Assessment Requirements for *ICTCBL247 Install, maintain and modify customer premises communications cabling: ACMA Open Rule*
Performance evidence	The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to: • complete a cabling installation and termination for: • three different types of telephone sockets: • Australian modular socket • RJ45, RJ12 or RJ11 modular socket • Mode 3 alarm socket • one network termination device (NTD), including the completion of TCA1 compliance forms and NTD records • read and interpret drawings related to cable layouts, outlet location, cable coding system, and identifiers and distributor locations • comply with all work, health and safety (WHS) requirements and work practices • meet Australian Communications and Media Authority (ACMA) requirements • apply cable conductor identification codes to connector pins • conduct tests and interpret cable test results • identify the correct telecommunications cable by its colour identifier • terminate systems at both distributor and outlet locations • install and terminate two jumperable distributors (campus distributor or building distributor) with a capacity of 100 pair or greater • terminate one non-jumperable distributor (local distributor) • terminate both cable ends for at least one 50 pair cable, 10 or 20 pair cable and one 4 pair data cable, including accurate completion of installation records, drawing alterations and compliance forms • place cables on support structures and building faces for both internal and external locations

	• secure cables with appropriate fasteners for the above locations • apply work practices that avoid cable damage • install at least one common type of earthing system used in customer premises for cabling systems • interpret and apply relevant legislation, regulations, codes, and standards • install earthing to suit cabling conditions • identify and rectify faulty cabling • use appropriate personal protective equipment when performing cabling tasks. Note: Evidence must be provided at least once when a specific volume or frequency is not stated.
Knowledge evidence	The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about: • legislation, regulations, codes, standards, rules, guidance notes and other formal agreements that impact on work, in particular: • Australian Communications and Media Authority (ACMA) Telecommunications Cabling Provider Rules, cabling registrars, cabler registration rules, regulations and standards • current Communications Alliance Standards including AS/CA S009 Installation requirements for customer cabling (Wiring Rules) national and state/territory WHS requirements • workplace and worksite requirements • cabling environment, cable type, cable identification, termination systems, earthing and protection, records • ACMA certified components list • labelling requirements • basic electrical principles of: • insulation, resistance • capacitance • impedance – as causes of, impedance, attenuation and cross-talk • cable screening types • colour codes • cable conductor – types of codes

	• customer switching systems and services • printed circuit boards • customer cabling environment for which cabling registration may be required for internal, external, above ground or below ground installation • information required to operate equipment according to a test specification • various cable types, their identifiers, termination systems (including jumperable and non-jumperable distributor), separations, support systems and fastening techniques used for telecommunications cabling • documentation and records required when cabling • manufacturer requirements for safe operation of equipment • earthing and protection strategies and technologies relevant to different cabling applications • test methods and performance requirements • typical issues and challenges that occur on site • installation requirements for underground and aerial cables including: • minimum depth of cover (below ground) • segregation from hazardous electrical and other services • earthing requirements • design parameters for underground cables with regards to the purpose they will serve and the prevention of water ingress • devices for a range of telecommunications cabling applications, including, ethernet data systems, audio and video systems, security systems and fire protection systems • integral bearer wires and application according to current Communications Alliance Standards • cable blocking agents used to prevent the ingress of water underground (excluding blown fibre tube systems) • features of cables designed for underground use that may be laid in conduit trenches or directly buried

	• responsibilities and process for communications installation works.
Assessment conditions	Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace. Access is required to: • site/s on which communications cabling activities can be carried out • two jumperable distributors (campus distributor or building distributor) with a capacity of 100 pair or greater • one non-jumperable distributor (LD) and a patch panel • a 50 pair and 4 pair and one ethernet cable • cabling and field equipment currently used in industry • relevant regulatory and site related documentation. Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards. Refer also to the Requirements for assessors in the ICT (Information Communications Technology) Information and Communications Technology Training Package Companion Volume Implementation Guide.
Links	Information and Communications Technology Companion Volume Implementation Guide