Australian Government

Department of Education, Employment and Workplace Relations

ICTCBL2136A Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule

Release: 1

ICTCBL2136A Install, maintain and modify customer premises communications cabling: ACMA Restricted Rule

Modification History

Not Applicable

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Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to safely install, maintain and modify customer premises communications cabling required according to Australian Communications and Media Authority's (ACMA) 'Restricted' Cabling Provider Rule. Restricted cabling is used in typical domestic premises, small offices, home offices and small business premises. Restricted cablers can install cable in large commercial and industrial premises provided the cabling is behind a compliant device and is not via jumperable distributors or patch panels. The telecommunications Cabling Provider Rules (CPRs) 2000 place various limitations on Restricted cablers. These include a prohibition on them performing cabling work where they may have access to a reticulated electrical supply that exceeds typical domestic single-phase and three-phase electrical supply voltages - nominally 240 volts AC (for single phase) or 415 volts AC (for three-phase). Assessment by a TITAB registered assessor is recommended. 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.

Application of the Unit

Application of the unit	This unit applies to customer cabling terminated on sockets and network termination devices (NTD). It applies to the installation, maintenance and modification of indoor and external cabling. Customer cabling, for the purpose of the 'Restricted' Cabling Provider Rule, may be used to connect devices for a range of applications including telecommunications, simple data and computer use, security alarm panels and fire control panels. Cabling may be metallic or optical fibre and may be aerial or underground. The cabling task may be a new cable installation or

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	upgrade of cable capacity for an existing network or subsystem for convergence to Next Generation Networks (NGN) applications. The cabling installer may provide services in telephony, voice over internet protocol (VoIP), internet protocol TV (IPTV) and computer data over a single metallic customer cable or optical fibre cable in a specific customer location.

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Work within the constraints imposed by customer premises and ACMA regulatory environment	1.1. Prepare for ***restricted cabling work*** within the ***regulatory environment***, ***cabling environment***, ***cable type***, ***cable identification***, ***termination systems***, ***earthing and protection***, ***records*** and ***relevant legislation***, ***codes***, ***regulations and standards*** 1.2. Identify ***building infrastructure*** which places critical constraints on ***cabling*** 1.3. Develop ***strategies to manage other infrastructure*** in relation to cabling 1.4. Notify appropriate personnel of ***safety hazards*** at the cabling work site
2. Manage remote power feed	2.1. Identify and avoid the risks posed by contact with remote power feeding services when performing cabling activity 2.2. Make site safe by identifying remote power feeding services which operate at above telecommunications network voltage (TNV) inside customer premises
3. Install cables and protective earth wires	3.1. Install cables according to manufacturer's application specifications, including tension and bending stress requirements 3.2. Identify and avoid sources of possible damage to cable, including hot pipes, sharp edges and cable burn 3.3. Allow sufficient excess at cable ends to facilitate ***termination*** 3.4. Place and secure cable to maintain safety and interference segregation according to legislative and industry standards 3.5. Install cable ties with correct tension to prevent cable sheath damage or transmission impairment and trimmed flush to prevent risk of personal damage 3.6. Install underground cables to minimum depth of cover and segregation from hazardous electrical and other services according to AS/ACIF S009:200 3.7. Install underground cables excluding blown fibre tube systems to incorporate a blocking agent within the cable to prevent the ingress of water 3.8. Install aerial cables to minimum clearance, segregation from hazardous electrical and other services and minimum height requirements according to AS/ACIF S009:2006 3.9. Install over-voltage protection devices according to AS/ACIF S009:2006 to all cable pairs, where

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ELEMENT	PERFORMANCE CRITERIA
	required, to suppress voltage surges and protect from earth potential rise (EPR) hazards and protectively earth the devices 3.10. Protect earth wire insulation against damage and segregate protective earths according to relevant legislative and industry standards

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ELEMENT	PERFORMANCE CRITERIA
4. Terminate and test cables and earth wires	4.1. Remove cable sheath to allow for correct termination length and without damage to underlying conductors and their insulation 4.2. Install NTD terminating modules according to manufacturer's specifications and cable pairs neatly and sequentially fanned for termination 4.3. Terminate conductors according to recommended colour code sequence using appropriate termination tools in the manufacturer's specified manner 4.4. Earth cable shield, if applicable, to manufacturer's specifications, relevant industry codes of practice and AS/ACIF S009:2006 4.5. Conduct visual inspection to confirm termination colour code sequence has been followed prior to end-to-end testing of wire and pair termination integrity 4.6. Terminate earth wires with connectors recommended by manufacturers according to accepted industry codes of practice and AS/ACIF S009:2006 4.7. Maintain earth wire continuity throughout and observe interface requirements with electrical systems 4.8. Test earthing installation for continuity, insulation resistance and conductive resistance according to accepted industry standards including AS/ACIF S009:2006 4.9. Confirm compatibility of alterations with existing systems and test new work both in isolation and when integrated with existing systems
5. Inspect cable route to ensure correct separations	5.1. Inspect ***separations*** along the entirety of the cable route and rectify separations which do not comply with regulations 5.2. Install barriers to achieve separations where sufficient spatial separation cannot be met
6. Create records	6.1. Provide the client with a job sign-off, telecommunications cabling advice form, at the completion of each cabling task 6.2. Complete NTD record cards for the work undertaken
7. Monitor work activity	7.1. Supervise cablers not holding appropriate registration for the task to ensure cabling activity is according to legislative requirements for safety and network integrity including AS/ACIF S008:2006 and AS/ACIF S009:2006

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Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to liaise with work associates, supervisors, team members and clients
- literacy skills to interpret:
  - related legislation, codes regulations and standards
  - technical documentation, such as equipment manuals and specifications
- numeracy skills to take and analyse measurements
- planning and organisational skills to organise and maintain equipment
- problem solving skills to solve equipment and logistics problems
- safety awareness skills to:
  - check environmental conditions are suitable for termination
  - make site safe and secure for cable installation
  - work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- task management skills to:
  - apply work practices which avoid cable damage
  - conform to work specifications and relevant industry standards
- technical skills to:
  - check cable route for obstructions and make clear using suitable methods
  - handle cable according to manufacturer's specifications so that conductors, sheath and insulation are not damaged during installation
  - select cabling system to meet customer performance needs
  - read and interpret drawings related to:
    - cable coding system, identifiers and distributor locations
    - cable layouts
    - outlet location
  - terminate copper twisted pair, including indoor, external, aerial and underground cabling
  - use diagnostic equipment
  - use hand and power tools

Required knowledge

- ACMA cabling provider rules, cabler registration rules, regulations and standards
- features and operating requirements of recognised cabling specific industry test

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REQUIRED SKILLS AND KNOWLEDGE
equipment • information required to operate equipment according to a test specification • legislation, codes of practice and other formal agreements that impact on the work activity • manufacturer's requirements for safe operation of equipment • specific occupational health and safety (OHS) requirements relating to the activity and site conditions • test methods and performance requirements • typical issues and challenges that occur on site

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Evidence Guide

EVIDENCE GUIDE	
The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.	

Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to:
	• complete a cabling installation and termination:
	  • three different types of telephone sockets:
	  • Australian modular socket
	  • United States modular socket
	  • Mode 3 alarm socket
	  • one network termination device (NTD)
	  • one alarm panel including completion of a TCA compliance form and NTD records
	  • one Ethernet cable
	• apply cable conductor identification codes
	• conduct and interpret cable test results
	• interpret and apply standards and regulations
	• comply with all related OHS requirements and work practices.

Context of and specific resources for assessment	Assessment must ensure: • a site on which communications cabling activities may be carried out • use of cabling and field equipment currently used in industry • licensing requirements and other site related documentation.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct observation of the candidate undertaking cabling installations and tests, and applying cable conductor identification codes • oral or written questioning to assess knowledge of test results, standards requirements and specific technical procedures.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

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EVIDENCE GUIDE	
	• ICTCBL2137A Install, maintain and modify customer premises communications cabling: ACMA Open Rule. Aboriginal people and other people from a non-English speaking background may have second language issues. Access must be provided to appropriate learning and assessment support when required. Assessment processes and techniques must be culturally appropriate, and appropriate to the oral communication skill level, and language and literacy capacity of the candidate and the work being performed. In all cases where practical assessment is used it will be combined with targeted questioning to assess required knowledge. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. Where applicable, physical resources should include equipment modified for people with special needs.

Range Statement

RANGE STATEMENT	
The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.	
Restricted cabling work refers to:	• aerial and underground cabling work on private property • cabling work that is performed only in relation to a customer's premises • customer cabling that terminates directly at the network boundary on a socket or network termination device.
Regulatory environment	• accredited registrars and registration

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RANGE STATEMENT	
refers to:	• ACMA • Certified Components List • Communications Alliance • labelling requirements • Telecommunications Act 1997.

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RANGE STATEMENT	

Cabling environment may refer to:	• indoor environments, including concealed locations:
	  • ceilings and false ceilings
	  • internal wall space
	  • modular workstations
	  • under floor
	• outdoor environments, including cable installations:
	  • aerial telecommunications cabling for restricted cabling work but does not include installations on poles shared with low voltage (LV) or high voltage (HV) electrical power cables or terminations
	  • external walls
	  • underground cabling in an exclusive trench or shared trench with electrical LV cables and other utilities.

Cable type may include:	• aerial • coaxial • copper twisted pair • data cables: • Category 5, 6, 6A, 7 or &A • external • indoor • optic fibre cable • underground.

Cable identification refers to:	• cable conductor identification codes:
	  • banded
	  • colour coded
	  • lettered
	  • numbered.

Termination systems must include:	• network termination device
	• socket types:
	  • Australian modular socket
	  • Mode 3 alarm socket
	  • United States modular socket.
	• (Note: jumperable distributors are not included in this requirement).

Earthing and protection must include:	• earthing for protection • surge suppression.
Records may include:	• NTD record cards

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RANGE STATEMENT	
	• telecommunication cabling advice forms TCA1 and TCA2.

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RANGE STATEMENT	
Relevant legislation, codes, regulations and standards include:	• accredited registrars and registration • Australian Communications Industry Forum (ACIF) standards and codes • ACMA • AS/NZS 3000:2007 • AS/ACIF S008:2006 and AS/ACIF S009:2006 • Certified Components List (CCL) • AS Communications Cabling Manual (CCM) -restricted • labelling • Overview Telecommunications Act 1997.
Building infrastructure may include:	• availability and suitability of existing cabling trays and fixing systems • building hazards • elevated working • high voltage (HV) power • restricted access.
Cabling may include:	• aerial customer • external customer • indoor customer • underground customer.
Strategies to manage other infrastructure may include:	• appropriate separations • correct use of cable trays and support systems • fastening techniques.

Safety hazards may refer to:	• access points that may contain:
	  • hazardous light or non-visible laser
	  • radio frequency (RF) emission
	• electrical supply and areas of earth potential rise (EPR) that require mandatory separation from communications cable
	• hazardous conduit as according to AS 1345:1995 conduit colours associated with a hazardous service.

Termination may include:	• Australian modular socket • Ethernet connectors terminated at both ends of an Ethernet cable and tested • Mode 3 alarm socket • NTD • United States modular socket • (Note: jumperable distributors are not included).
Separations refer to:	• correct separations between communications cable and other services:

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RANGE STATEMENT	
	• LV • HV single core • HV multi-core • open terminations • separations covered by AS/ACIF S009:2006.

Unit Sector(s)

Unit sector	Telecommunications

Co-requisite units

Co-requisite units		

Competency field

Competency field	Cabling

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