Australian Government

ICTTEN3250B Provide infrastructure for telecommunications customer equipment

Release 1

ICTTEN3250B Provide infrastructure for telecommunications customer equipment

Modification History

Release	Comments
Release 2	This version first released with *ICT10 Integrated Telecommunications Training Package Version 3.0.* References to other units updated. Outcomes deemed equivalent.
Release 1	This version first released with *ICT10 Integrated Telecommunications Training Package Version 1.0.*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to install supporting infrastructure for telecommunications equipment and associated hardware equipment. The unit also includes installation of access equipment and associated media, power and monitoring equipment and alarm systems.

Application of the Unit

The unit applies to field officers, installation technicians, technical supervisors, contractors and other service providers.

Licensing/Regulatory Information

Licensing, legislative, regulatory and certification requirements apply to working at heights. If an elevated work platform (EWP) is required, verify state or territory law requirements for a licence to operate an EWP. Users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
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.*

Elements and Performance Criteria

1. Prepare for infrastructure installation work	1.1 Identify *relevant legislation, codes, regulations and standards* that apply to work
	1.2 Notify *customer* to arrange site access and obtain installation plan and specifications
	1.3 Conduct a *site survey* to verify that *infrastructure* installation requirements can be met
	1.4 Identify site *hazards* and notify appropriate personnel to make site safe
	1.5 Notify customer of alterations required to installation design and make recommendations for possible solutions
	1.6 Obtain approval for alterations and update installation plan
	1.7 Develop an installation activity schedule to minimise disruption to the workplace according to relevant regulation and standards
	1.8 Obtain *material supplies, safety equipment, resources, tools and test equipment* required for safe installation
2. Build customer equipment infrastructure	2.1 Prepare for and undertake work according to *work health and safety (WHS) and environmental requirements*
	2.2 Build telecommunications closet or telecommunications equipment room for equipment, distributors and AC-DC power systems according to design plans, manufacturer specifications and safety and electrical standards
	2.3 Build *cable support systems* for signal, data cabling and optical cables according to plans and specifications
	2.4 Organise the installation of mains AC electrical power cabling infrastructure as specified on the plan
	2.5 Install cable distribution frames according to plan and manufacturer specifications
	2.6 Install protective earthing to metal infrastructures or gas arrestors according to specifications or design
3. Install UPS power infrastructure	3.1 *Install uninterruptible power source or supply (UPS) systems* as required by specification or design, and connect according to manufacturer and WHS requirements
	3.2 Test and monitor UPS battery discharge levels and obtain replacement batteries under warranty where required
	3.3 Identify and rectify faults where possible or escalate according to organisational policy

4. Restore site and complete documentation	4.1 Attach infrastructure *labels and designations* according to organisational requirements
	4.2 Complete inspection sheets and declare asset ready for customer sign-off documentation
	4.3 Clean up site
	4.4 Notify customer and obtain sign-off

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Required Skills and Knowledge

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

Required skills

- analytical skills to compare and evaluate most effective technical solutions
- communication skills to:
    - liaise with customers to ensure requirements are identified
    - negotiate approvals and contract arrangements with suppliers and contractors
- literacy skills to:
    - document technical requirements and procedures
    - interpret technical specifications and related documentation
- numeracy skills to calculate budget requirements and limitations
- planning and organising skills to:
    - meet client requirements within agreed timeframes
    - secure site access and make arrangements for equipment delivery
    - set out project requirements and priorities
- problem-solving skills to respond to unexpected variations to requirements
- technical skills to:
    - perform cabling and terminating work
    - use hand tools to:
        - affix supports, cable trays and racks to surfaces
        - assemble infrastructure
        - work with construction materials.
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Required knowledge

- best practices to minimise environmental impacts, including options for green ICT installations
- cabling types, connectors and cabling structures
- common customer telecommunications applications and related equipment
- range of other customer equipment, such as alarms and media devices
- current legislation and standards relating to installation of telecommunications equipment and connection to carrier services
- key features of backup UPS systems and AC mains power requirements and electrical safety
- network topologies, interface and interconnect solutions
- type of connections to carrier infrastructure or equipment
- WHS requirements for:
    - confined spaces
    - electrical safety
    - heights
    - lifting
    - materials handling

- physical hazards
- warranty information for equipment supplies and contractor work guarantees.

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.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • identify and work with potential earthing locations, cable routes, cable support systems, data cabinets, telecommunication enclosures, and distributors • build 19 inch racks • install protective earth installations • organise AC mains power infrastructure • install UPS DC backup power.
Context of and specific resources for assessment	Assessment must ensure access to: • site where supporting infrastructure may be installed, including simulated environment • use of industry-current plant, tools and equipment • relevant regulatory and equipment documentation that impacts on work activities.
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 building metal superstructure to house equipment • direct observation of the candidate installing protective earth and functional earth installations • review of installation activity schedule prepared by the candidate • oral or written questioning to assess knowledge of installation issues, types of systems and applications.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example: • ICTCBL3009B Install, terminate and certify structured

	cabling installation • ICTCBL3010B Install and terminate optical fibre cable on customer premises. 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

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.

Relevant legislation, codes, regulations and standards may include:	- appropriate licences for: - crane - forklift - winch - AS/ACIF S008:2006 - AS/ACIF S009:2006 - AS/NZS 3000:2007 - AS/NZS 3080:2003 - AS/NZS 3084:2003 - AS/NZS 3085.1:2004 - AS/NZS IEC 61935.1:2006 - AS/NZS IEC 61935.2:2006 - AS/NZS ISO/IEC 14763.3:2007 - AS/NZS ISO/IEC 15018:2005 - AS/NZS ISO/IEC 24702:2007 - cabling security codes and regulations - Communications Alliance standards and codes - Communications Cabling Manual (CCM) Volume 1 - Environmental Protection Acts - WHS Acts
Customer may be:	- architect - asset manager - builder - business owner - nominated representative - project manager - service provider
Site survey may include:	- cable tunnels pathways - equipment bays - floor layout - floor loadings - lighting - preparation area - roof structures

	• ventilation • wall structures
Infrastructure may include:	• air conditioning requirements • alarm panels • cable entries • distribution frames • duct and cable trays • equipment racks • power supplies • radio structure
Hazards may include:	• building debris • earth potential rise (EPR) • glass fibre • live power lines • manual handling • mud and water • natural gas and other gas build-up • needle stick injury • optical fibre cable containing hazardous light • radio frequency (RF) equipment emitting radiation • remote power feeding services which operate at above telecommunications network voltage (TNV) • vermin
Material supplies may include:	• cable racks • cable trays, nuts and bolts • distribution frames or blocks • earth terminal and rod • frames and cabinets • insulation blocks • iron support structures • jumper wire • lacing, twine and cable ties • patch panels • termination blocks

Safety equipment may include:	• electrical isolators
	• EWP
	• harnesses
	• manual lifters
	• personal protective equipment, including:
	    • acid-proof clothing
	    • earmuffs

	- face masks - gloves - head protection - kneepads - safety boots - safety glasses - safety barriers
Resources may include:	- finance - labour - materials - tools and test equipment - vehicles
Tools and test equipment may include:	- tools: - antistatic wrist strap - pliers - power drill - screwdrivers - sockets - soldering iron - spanners - test equipment: - antistatic testers - cable testers - displacement tools - humidity and temperature testers - insulation testers - load testers - multimeters - optical loss test set - oscilloscope - structured cabling certification - volt meters
WHS and environmental requirements may relate to:	- decommissioning and isolating work site and lines before beginning work - environmental considerations: - clean-up protection - stormwater protection - waste management - identifying other services, including power and gas - safe work practices, such as the safe use and handling of:

	- asbestos - chemicals - materials - tools and equipment - work platforms - safety equipment: - flashing lights - gas and other hazard detection equipment - safety barriers - traffic cones - trench guards - warning signs and tapes - special access requirements - suitable light and ventilation
Cable support systems may include:	- entrance facilities - intra- and inter-building facilities
Installing uninterruptible power source or supply systems may include:	- organising certification of electrical installation - terminating and connecting DC power cables to equipment - testing DC electrical cabling
Labels and designations may include:	- cabinets - cables - distribution panels - racks - vendor labels

Unit Sector(s)

Telecommunications - Telecommunications networks engineering