



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **ICTCBL3019A Install underground cable**

**Release: 1**

## **ICTCBL3019A Install underground cable**

### **Modification History**

Not Applicable

## Unit Descriptor

<p><b>Unit descriptor</b></p>	<p>This unit describes the performance outcomes, skills and knowledge required to install underground cable for all communications applications in Access Networks or customer premises.</p> <p>Assessment by a TITAB registered assessor is recommended.</p> <p>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 Australian Communications and Media Authority (ACMA)-accredited registrar.</p>
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## Application of the Unit

<p><b>Application of the unit</b></p>	<p>Technical staff who install underground cable for new and upgrades of telecommunications cabling infrastructure apply the skills and knowledge in this unit.</p> <p>Communications applications include digital and analog, telephony, data, video, digital broadcasting, computer networks, local area networks (LAN), wide area networks (WAN) and multimedia.</p> <p>It may make use of formal documentation, such as accurate completion of a telecommunications cabling advice (TCA) form (TCA1 form) and cable records.</p>
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	This unit contains employability skills.
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## 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. Prepare for underground cable hauling	1.1. Prepare for given work according to <b>relevant legislation, codes, regulations and standards</b> including <b>cable</b> installation standards 1.2. Arrange access to the site according to required procedure 1.3. Verify <b>cable installation requirements</b> from <b>plan</b> and recognise <b>constraints</b> 1.4. Inform appropriate personnel of existing and potential <b>hazards</b> on worksite 1.5. Obtain information on location of other services from <b>relevant authorities</b> 1.6. Select suitable <b>tools and equipment</b> and <b>protective equipment</b> to meet required industry standards 1.7. Erect <b>barriers</b> according to safety requirements 1.8. Set up cable installation equipment according to manufacturer's requirements and enterprise guidelines 1.9. Clean debris and obstructions from conduit using suitable safe methods 1.10. Seal cable ends to exclude ingress of foreign matter
2. Haul underground cable	2.1. Run hauling feeder through conduit to enable cable hauling following occupational health and safety ( <b>OHS</b> ) and <b>environmental requirements</b> 2.2. Attach cable to hauling feeder according to manufacturer's specifications 2.3. Employ cable slippers or rollers to ensure no sheath damage when hauling into and out of enclosures 2.4. Lubricate cable and haul evenly at correct tension to reduce risk of cable damage 2.5. Maintain sufficient cable length allowance for jointing
3. Seal and secure cable and complete all documentation	3.1. Tag all cables to enable future identification 3.2. Seal cable ends to prevent ingress of foreign material 3.3. Place cable on supports in enclosures to reduce damage to conductors and enable ease of access for maintenance 3.4. Fit over voltage protection devices to all cables with metallic component where required

ELEMENT	PERFORMANCE CRITERIA
	3.5. Complete reports on installation and design amendments accurately and file promptly according to customer requirements 3.6. Reinstall site to identified requirements if required 3.7. Notify customer and obtain sign off

## 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 internal and external personnel on technical and operational matters
- literacy skills to interpret technical documentation, such as cable plans, equipment manuals, specifications and service orders
- 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:
  - apply precautions and required action to minimise, control or eliminate hazards that may exist during work activities
  - select and use required personal protective equipment conforming to industry and OHS standards
  - work systematically with required attention to detail without injury to self or others, or damage to goods or equipment
- task management skills to work systematically with required attention
- technical skills to:
  - perform fault clearance
  - use diagnostic equipment
  - use excavation machinery
  - use hand and power tools

#### Required knowledge

- ACMA Competency Requirements for Telecommunications Cabling Provider Rules 2000
- features and operating requirements of test equipment
- information required to operate equipment according to a test specification

**REQUIRED SKILLS AND KNOWLEDGE**

- legislation, codes of practice and other formal agreements that impact on the work activity
- manufacturer's requirements for safe operation of equipment
- specific OHS requirements relating to the activity and site conditions
- test methods and performance requirements
- typical issues and challenges that occur on site

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
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.	
<b>Overview of assessment</b>	
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>haul underground cable to industry standards</li> <li>restore site and complete documentation</li> <li>comply with all related OHS requirements and work practices.</li> </ul>
<b>Context of, and specific resources for assessment</b>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>sites where installation of underground cable may be conducted</li> <li>use of installation equipment currently used in industry</li> <li>relevant regulatory and equipment documentation that impact on cable installation activities.</li> </ul>
<b>Methods of assessment</b>	<p>A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:</p> <ul style="list-style-type: none"> <li>review of a hands-on project completed by the candidate</li> <li>review of an oral and written report with completed documentation, including updated cable plans and records</li> <li>direct observation of the candidate installing underground cable.</li> </ul>
<b>Guidance information for assessment</b>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:</p> <ul style="list-style-type: none"> <li>ICTCBL3018A Install underground enclosures and conduit.</li> </ul> <p>Aboriginal people and other people from a non-English speaking background may have second language issues.</p> <p>Access must be provided to appropriate learning and</p>



EVIDENCE GUIDE	
	<p>assessment support when required.</p> <p>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.</p> <p>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.</p> <p>Where applicable, physical resources should include equipment modified for people with special needs.</p>

## Range Statement

RANGE STATEMENT	
<p>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.</p>	
<p><b><i>Relevant legislation, codes, regulations and standards</i></b> includes:</p>	<ul style="list-style-type: none"> <li>• Australian Communications Industry Forum (ACIF) standards and codes</li> <li>• AS Communications Cabling Manual (CCM) Volume 1</li> <li>• AS/NZS 3000:2007</li> <li>• AS/NZS 3080:2003</li> <li>• AS/NZS 3084:2003</li> <li>• AS/NZS 3085.1:2004</li> <li>• AS 3260:1993</li> <li>• AS/NZS IEC 61935.1:2006</li> <li>• AS/NZS IEC 61935.2:2006</li> <li>• AS/NZS ISO/IEC 14763.3:2007</li> <li>• AS/NZS ISO/IEC 15018:2005</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• AS/NZS ISO/IEC 24702:2007</li> <li>• Australian building codes and regulations</li> <li>• cabling security codes and regulations</li> <li>• Environmental Protection Acts</li> <li>• fire regulations</li> <li>• National Association of Testing Authorities requirements</li> <li>• OHS</li> <li>• technical standards AS/ACIF S008:2006 and AS/ACIF S009:2006.</li> </ul>
<b><i>Cable</i></b> may include:	<ul style="list-style-type: none"> <li>• Category 5</li> <li>• Category 6 or 6A</li> <li>• Category 7 or 7A.</li> <li>• coaxial</li> <li>• copper</li> <li>• optical fibre.</li> </ul>
<b><i>Cable installation requirements</i></b> may include:	<ul style="list-style-type: none"> <li>• cable size and type</li> <li>• distance to be hauled</li> <li>• existing cables</li> <li>• pipe size</li> <li>• standards.</li> </ul>
<b><i>Plan</i></b> may include:	<ul style="list-style-type: none"> <li>• building</li> <li>• constructions</li> <li>• design</li> <li>• site layout drawings</li> <li>• street.</li> </ul>
<b><i>Constraints</i></b> may include:	<ul style="list-style-type: none"> <li>• availability of cable size and type</li> <li>• earth potential rise (EPR): <ul style="list-style-type: none"> <li>• event at a site, such as an electrical distribution substation, may expose telecommunications personnel, users or plant to hazardous voltages</li> </ul> </li> <li>• condition of enclosures and pipe</li> <li>• optical cable may contain a hazardous light</li> <li>• radio frequency (RF) equipment may emit hazardous radiation</li> <li>• remote power feeding which operate at above telecommunications network voltage (TNV)</li> <li>• site conditions.</li> </ul>
<b><i>Hazards</i></b> may include:	<ul style="list-style-type: none"> <li>• EPR</li> <li>• optical cable:</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• bare fibres</li> <li>• hazardous laser light</li> <li>• RF emission</li> <li>• remote power feeding.</li> </ul>
<i>Relevant authorities</i> may include:	<ul style="list-style-type: none"> <li>• cable location services (Dial Before you Dig)</li> <li>• Environment Protection</li> <li>• local government</li> <li>• private owners</li> <li>• utility providers such as:               <ul style="list-style-type: none"> <li>• electricity</li> <li>• fire services</li> <li>• gas</li> <li>• other telecommunications providers</li> <li>• water.</li> </ul> </li> </ul>
<i>Tools and equipment</i> may include:	<ul style="list-style-type: none"> <li>• hand tools, such as:               <ul style="list-style-type: none"> <li>• crowbar</li> <li>• feeders</li> <li>• glue</li> <li>• hammers</li> <li>• hauling eyes</li> <li>• jinker</li> <li>• picks</li> <li>• saws</li> <li>• shovels</li> <li>• slippers</li> <li>• spools and drums</li> </ul> </li> <li>• mechanical equipment, such as:               <ul style="list-style-type: none"> <li>• auger</li> <li>• backhoe</li> <li>• borer</li> <li>• concrete gutter</li> <li>• ditch witch</li> <li>• excavators</li> <li>• forklift</li> <li>• mole plough</li> <li>• trenching machine.</li> </ul> </li> </ul>
<i>Protective equipment</i> may include:	<ul style="list-style-type: none"> <li>• earmuffs</li> <li>• gloves</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• head protection</li> <li>• kneepads</li> <li>• masks</li> <li>• protective suits</li> <li>• safety boots</li> <li>• safety glasses.</li> </ul>
<i>Barriers</i> may include:	<ul style="list-style-type: none"> <li>• flashing lights</li> <li>• trench guards</li> <li>• warning signs and tapes</li> <li>• witches hats.</li> </ul>
<i>OHS and environmental requirements</i> may relate to:	<ul style="list-style-type: none"> <li>• identifying other services, including power and gas</li> <li>• need for decommissioning and isolating worksite and lines prior to commencement</li> <li>• safe working practices, such as the safe use and handling of: <ul style="list-style-type: none"> <li>• asbestos</li> <li>• chemicals</li> <li>• materials</li> <li>• tools and equipment</li> <li>• work platforms</li> </ul> </li> <li>• safety equipment: <ul style="list-style-type: none"> <li>• flashing lights</li> <li>• gas and other hazard detection equipment</li> <li>• safety barriers</li> <li>• trench guards</li> <li>• warning signs and tapes</li> <li>• witches hats</li> </ul> </li> <li>• special access requirements</li> <li>• suitable light and ventilation</li> <li>• environmental considerations: <ul style="list-style-type: none"> <li>• clean-up protection</li> <li>• noise, dust and clean-up management</li> <li>• stormwater protection</li> <li>• waste management.</li> </ul> </li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Telecommunications
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### Co-requisite units

<b>Co-requisite units</b>	

### Competency field

<b>Competency field</b>	Cabling
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