



**Australian Government**

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

# **ICTTEN5037A Design a telecommunications project**

**Release: 1**

## **ICTTEN5037A Design a telecommunications project**

### **Modification History**

Not Applicable

## Unit Descriptor

<p><b>Unit descriptor</b></p>	<p>This unit describes the performance outcomes, skills and knowledge required to scope requirements, assess land site suitability, arrange acquisition of site and produce building design plans for a telecommunications building project.</p> <p>Building facilities include exchange building, call centre building, computer centre, mobile phone tower, cellular base station hut, radio transmitter and satellite station.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.</p>
-------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Application of the Unit

<p><b>Application of the unit</b></p>	<p>Technical officers or engineers from private and public organisations apply the skills and knowledge in this unit. They combine technical design skills with organisational skills to apply planning principles for provisioning of the various building projects and technologies within a telecommunications network to meet future customer demands.</p> <p>Technical officers or engineers may be responsible for small projects or parts of larger projects and for the operational and engineering of the telecommunications network in general.</p>
---------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Licensing/Regulatory Information

Refer to Unit Descriptor

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	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.
-------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Scope design options	1.1. Determine the nature, purpose and type of the new <i>facilities</i> in the proposed project from project specifications obtained from planners 1.2. Analyse project brief to scope the requirements of the project and consider design options with consideration to <i>legislation</i> governing carriers in Australia 1.3. Evaluate design requirements to determine optimal site selection for the project to house facilities 1.4. Arrange for an <i>environmental impact study (EIS)</i> to be conducted on the selected site with project requirements to assess the suitability of the site
2. Evaluate and arrange for land acquisition	2.1. Evaluate the findings of the EIS to determine the suitability of the land for the project 2.2. Prepare a justification report on a favourable EIS and consult affected property owners to establish a base for negotiation 2.3. Determine the potential for land <i>acquisition or purchase</i> from analysis of previously gathered data and EIS findings and ensure compliance with regulation from legislation
3. Analyse area and select design option	3.1. Analyse physical attributes of the area, possible <i>environmental impacts</i> and previously collected data to prepare design options 3.2. Prepare field sketch according to enterprise requirements and develop solutions to any obvious physical impediment to construction 3.3. Produce <i>design options</i> for the area that are viable for the enterprise and recommend a preferred option with justifications 3.4. Evaluate selection of preferred option to ensure that enterprise business strategy outcomes and policies are satisfied
4. Notify interested parties	4.1. Assess <i>resources</i> available for project implementation to ensure that works are within the enterprise's schedule 4.2. Notify <i>interested parties</i> of the type, extent and duration of the proposed works according to enterprise policy 4.3. Obtain all required written permission from interested parties and forward to those who will

ELEMENT	PERFORMANCE CRITERIA
	carry out the job
5. Produce design plan and documentation	5.1. Prepare <i>design plan</i> to enterprise requirements including relevant <i>geographical and topological information</i> 5.2. Indicate location and specification of works and network equipment accurately and clearly 5.3. Specify resources needed to undertake the project 5.4. Update <i>enterprise information systems</i> according to enterprise guidelines and industry practice 5.5. Produce a complete <i>design report</i> and present to management for approval

## 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 read and interpret legislation, write reports and prepare design plan
- planning and organisational skills to plan, prioritise and monitor own work
- problem solving and contingency management skills to adapt requirements to particular building facilities
- research skills to interrogate databases and investigate different building services
- technical skills to:
  - evaluate design requirements
  - evaluate findings of EIS
  - scope requirements
  - use computer assisted design (CAD) software

#### Required knowledge

- Access Networks
- Australian building codes and regulations
- CAD software
- Core Networks
- Environmental Protection Act

**REQUIRED SKILLS AND KNOWLEDGE**

- heritage protection listings
- EIS
- legislation relevant to project
- network performance and capacity
- networks planning and procedures
- site surveys
- technological innovations and development
- Telecommunications Act 1997

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<p>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.</p>	
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></p>	<p>Evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• scope design options</li> <li>• recommend acquisition of land</li> <li>• prepare justification report including evaluation of EIS findings</li> <li>• produce design options</li> <li>• prepare completed building design plan for a telecommunications project.</li> </ul>
<p><b>Context of, and specific resources for assessment</b></p>	<p>Assessment must ensure:</p> <ul style="list-style-type: none"> <li>• sites on which projects may be designed</li> <li>• CAD drawing facilities</li> <li>• relevant databases, legislative requirements and other site and project related documentation.</li> </ul>
<p><b>Method of assessment</b></p>	<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>• direct observation of the candidate undertaking design tasks</li> <li>• review of drawings, plans and specifications prepared by the candidate</li> <li>• oral or written questioning to assess knowledge of the design process</li> <li>• review of a completed building design plan for a telecommunications project prepared by the candidate.</li> </ul>
<p><b>Guidance information for assessment</b></p>	<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>• ICTNPL4110A Evaluate the planning requirements for provisioning a telecommunications building facility</li> <li>• ICTNPL4111A Develop provisioning of telecommunications building works project</li> <li>• ICTNPL4150A Apply knowledge of regulation and legislation for the telecommunications industry.</li> </ul>



**EVIDENCE GUIDE**

	<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 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**

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.

***Facilities*** may include:

- call centre building
- cellular base station hut
- computer centre
- exchange building
- mobile phone tower
- radio transmitter

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• satellite station.</li> </ul>
<b>Legislation</b> may include:	<ul style="list-style-type: none"> <li>• ACMA technical standards</li> <li>• Australian building codes and regulations</li> <li>• Australian Communications Industry Forum (ACIF) standards and codes</li> <li>• Environmental Protection Acts</li> <li>• Telecommunications Act 1997.</li> </ul>
<b>Environmental impact study (EIS)</b> may include:	<ul style="list-style-type: none"> <li>• aboriginal sacred site</li> <li>• contaminated site</li> <li>• fauna</li> <li>• flora</li> <li>• heavily populated area</li> <li>• heritage protected site</li> <li>• mining</li> <li>• national parks</li> <li>• power lines</li> <li>• profile</li> <li>• protected species habitat</li> <li>• terrain.</li> </ul>
<b>Acquisition or purchase</b> may be regulated by:	<ul style="list-style-type: none"> <li>• enterprise policies</li> <li>• federal agencies</li> <li>• finance rules</li> <li>• local council</li> <li>• procurement rules.</li> </ul>
<b>Environmental impacts</b> may include:	<ul style="list-style-type: none"> <li>• access to site</li> <li>• drainage</li> <li>• environment</li> <li>• flood mitigation</li> <li>• habitats</li> <li>• heritage values</li> <li>• noise</li> <li>• power requirements</li> <li>• radio frequency (RF) radiation</li> <li>• seasonal changes</li> <li>• traffic generation</li> <li>• visual impact.</li> </ul>
<b>Design options</b> may refer to:	<ul style="list-style-type: none"> <li>• building access</li> <li>• building structures</li> <li>• emergency evacuation provision</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• equipment</li> <li>• equipment floor plan</li> <li>• floor loadings</li> <li>• labour</li> <li>• material</li> <li>• rack layout</li> <li>• radio towers</li> <li>• services:               <ul style="list-style-type: none"> <li>• air conditioning</li> <li>• building alarm</li> <li>• cable access</li> <li>• emergency power plant</li> <li>• fire services</li> <li>• power</li> </ul> </li> <li>• special requirements of equipment technologies</li> <li>• time.</li> </ul>
<i>Resources</i> may include:	<ul style="list-style-type: none"> <li>• funding</li> <li>• labour</li> <li>• major equipment and materials</li> <li>• support services</li> <li>• test equipment</li> <li>• time.</li> </ul>
<i>Interested parties</i> may include:	<ul style="list-style-type: none"> <li>• community groups</li> <li>• local councils</li> <li>• local residents and property owners</li> <li>• other service providers</li> <li>• state and federal agencies.</li> </ul>
<i>Design plan</i> may include:	<ul style="list-style-type: none"> <li>• air conditioning</li> <li>• cable access</li> <li>• cabling racks and trays</li> <li>• emergency power plant</li> <li>• equipment floor plan</li> <li>• equipment list</li> <li>• fire services</li> <li>• network alarm</li> <li>• network management system</li> <li>• power</li> <li>• rack layout</li> </ul>

<b>RANGE STATEMENT</b>	
	<ul style="list-style-type: none"> <li>• radio towers</li> <li>• test equipment facility.</li> </ul>
<i>Geographical and topological information</i> may include:	<ul style="list-style-type: none"> <li>• dams</li> <li>• fences</li> <li>• flood prone</li> <li>• hazards</li> <li>• location of other services and plant</li> <li>• potential hazards</li> <li>• potential soil erosion areas</li> <li>• survey marks</li> <li>• water ways.</li> </ul>
<i>Enterprise information systems</i> may be:	<ul style="list-style-type: none"> <li>• hard copy</li> <li>• maps</li> <li>• plans</li> <li>• software database</li> <li>• text or image based.</li> </ul>
<i>Design report</i> may include:	<ul style="list-style-type: none"> <li>• analysis of design options</li> <li>• evaluation report of EIS findings</li> <li>• recommendations for preferred design options</li> <li>• site acquisition procedure.</li> </ul>

## Unit Sector(s)

<b>Unit sector</b>	Telecommunications
--------------------	--------------------

## Co-requisite units

<b>Co-requisite units</b>		

## Competency field

<b>Competency field</b>	Telecommunications networks engineering
-------------------------	-----------------------------------------