

22509VIC

Diploma of Electrotechnology Project Management

This course has been accredited under Part 4.4 of the Education and Training Reform Act 2006.

Accredited for the period: 1 July 2019 to 30 June 2024





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Section A: Copyright and Course Classification Information

- 1. Copyright owner of the course** Copyright of this course is held by the Department of Education and Training, Victoria
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- 2. Address** Executive Director
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Higher Education and Skills Group
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Box Hill Institute of TAFE
Private Bag 2014
Box Hill, Victoria 3128
Ph: 03 9286 9880
Email: gadda@bhtafe.edu.au
- 3. Type of submission** Reaccreditation
- 4. Copyright acknowledgement** Copyright of the following units of competency from nationally endorsed training packages is administered by the Commonwealth of Australia and can be accessed from: training.gov.au (see website [here](#))
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BSB Business Services Training Package
BSBPMG518 Manage project procurement
BSBPRC402 Negotiate contracts
BSBWHS504 Manage WHS risks
BSBWOR502 Lead and manage team effectiveness
BSBWRK520 Manage employee relations
BSBWRT401 Write complex documents

CPC08 Construction, Plumbing and Services Training Package
CPCBC5005A Select and manage building and construction contractors

CPP07 Property Services Training package

CPPBDN5013A Develop and collaborate on building information models for small-scale building design projects

PSP Public Sector Training Package

PSPGEN053 Provide leadership

UEE11 Electrotechnology Training Package

UEENEEC005B Estimate electrotechnology projects

UEENEEC006B Prepare tender submissions for electrotechnology projects

5. Licensing and franchise

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Request for other use should be addressed to:

Executive Director

Engagement, Participation and Inclusion Division

Higher Education and Skills Group

Department of Education and Training (DET)

Email: course.enquiry@edumail.vic.gov.au

Copies of this publication can be downloaded free of charge from the DET website [here](#).

6. Course accrediting body

Victorian Registration and Qualifications Authority (VRQA)

7. AVETMISS information

ANZSCO code: 312312 Electrical Engineering Technician

ASCED Code: 0313 Electrical and Electronic Engineering and Technology

National course code: 22509VIC

8. Accreditation period

1 June 2019 to 30 June 2024



Section B: Course Information

1. Nomenclature <i>Standard 1 AQTF Standards for Accredited Courses</i>	
1.1 Name of the qualification	Diploma of Electrotechnology Project Management
1.2 Nominal duration of the course	400 - 520 hours
2. Vocational or educational outcomes <i>Standard 1 AQTF Standards for Accredited Courses</i>	
2.1 Purpose of the course	The primary purpose of the Diploma of Electrotechnology Project Management is to provide participants with knowledge and skills to manage a variety of electrotechnology projects effectively.
3. Development of the course <i>Standards 1 and 2 AQTF Standards for Accredited Courses</i>	
3.1 Industry/enterprise/community needs	<p>The electrotechnology industry is diverse, consisting of a number of sectors all of which are highly technical. Many of the sectors are experiencing significant technological change and growth due to advances in fields such as data communication, home automation, intelligent systems for industrial and facilities management and renewable energy systems. According to industry advice the need for well trained project managers remains strong and the ongoing availability of an accredited course continues to be supported by key industry organisations.</p> <p>The initial Diploma of Electrical Project Management was developed at the request of the National Electrical and Communications Association of Australia (NECA) following extensive consultation with employer groups around Australia. Employers identified the need for tradespeople and other workers within the electrotechnology industry to have access to a national qualification in project management. The qualification is also suitable for electrical engineers or other middle management persons preparing for project management roles in medium to large electrotechnology organisations.</p> <p>Availability of this qualification also provides a career pathway in the industry for trade and non trade people working in the industry. Although there are a number of qualifications in UEE11 Electrotechnology Training Package at higher levels, these do not reflect the competencies required by employers for electrotechnology project managers and they are not being taken up by individuals preparing themselves for project management responsibilities.</p> <p>The review and redevelopment of this course has been guided by a project steering committee (PSC). At the commencement of the project the committee reviewed and updated the existing course knowledge and skills summary (see Appendix 1), to ensure it is consistent with the current requirements for a project manager in the electrotechnology industry. The summary also contains the current knowledge and skills requirements for an electrical contractor which is included in this course (VU22723).</p>

	<p>The PSC consisted of the following people:</p> <table border="0"> <tr> <td>Ian Turnbull (Chairperson)</td><td>Applied Technology Training and Consulting Australia</td></tr> <tr> <td>Alex Newman</td><td>Furtue Energy Skills</td></tr> <tr> <td>Sue Sizer</td><td>Energy Safe Victoria (ESV)</td></tr> <tr> <td>Graeme Hannaker</td><td>Metro Trains Melbourne (MTM)</td></tr> <tr> <td>Damian Sander</td><td>APAC, Nomad Digital</td></tr> <tr> <td>Nathan Pelzer</td><td>Jonoco Pty Ltd</td></tr> <tr> <td>Craig Jones</td><td>Melbourne Polytechnic</td></tr> </table> <p><i>In attendance:</i></p> <table border="0"> <tr> <td>George Adda</td><td>CMM Engineering Industries</td></tr> <tr> <td>Trevor Lange</td><td>CMM Engineering Industries</td></tr> </table> <p>This course:</p> <ul style="list-style-type: none"> – does not duplicate, by title or coverage, the outcomes of an endorsed training package qualification – is not a subset of a single training package qualification that could be recognised through one or more statements of attainment or a skill set – does not include units of competency additional to those in a training package qualification that could be recognised through statements of attainment in addition to the qualification – does not comprise units that duplicate units of competency of a training package qualification 	Ian Turnbull (Chairperson)	Applied Technology Training and Consulting Australia	Alex Newman	Furtue Energy Skills	Sue Sizer	Energy Safe Victoria (ESV)	Graeme Hannaker	Metro Trains Melbourne (MTM)	Damian Sander	APAC, Nomad Digital	Nathan Pelzer	Jonoco Pty Ltd	Craig Jones	Melbourne Polytechnic	George Adda	CMM Engineering Industries	Trevor Lange	CMM Engineering Industries
Ian Turnbull (Chairperson)	Applied Technology Training and Consulting Australia																		
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Nathan Pelzer	Jonoco Pty Ltd																		
Craig Jones	Melbourne Polytechnic																		
George Adda	CMM Engineering Industries																		
Trevor Lange	CMM Engineering Industries																		
<p>3.2 Review for re-accreditation</p>	<p>The current course 22267VIC Diploma of Electrical Project Management was initially accredited for a period of five years (1 January 2014 to 31 December 2018) and a further 12 months extension was granted to bring the expiry date to 31 December 2019.</p> <p>Three Victorian RTOs currently have this qualification on their Scope of Registration. Enrolment figures for the past five years for Fee For Service and Government funded places are:</p> <ul style="list-style-type: none"> • 2014 - 29 • 2015 - 99 • 2016 - 150 • 2017 - 43 • 2018 – 47 <p>The five core units were reviewed for their on going suitability to meet the course outcomes and three units were retained. Unit UEENEEG169A – <i>Manage large electrical projects</i> was seen as lacking in number of areas and has been replaced with a new unit: VU22721 – <i>Manage electrotechnology projects</i>. The new unit now incorporates the WHS/OHS requirements of the</p>																		

	<p>former unit's prerequisite - unit UEENEEE101A. This unit has also been deleted from the core component reducing the number of core units to four.</p> <p>The enrolment figures for the elective units in the current course indicated a number of electives are not being used. As a consequence, the PSC made the decision to rationalise the number of elective units available using the revised knowledge and skills profile and the past enrolments figures as the guide. In addition, the five elective streams in the current course have been replaced by a single cluster of elective units to encourage a broader approach to the selection of electives units made available to participants by RTOs.</p> <p>As part of the course review process the former elective unit VU21527 – <i>Conduct an electrical contracting business</i> has been expanded to address the comprehensive range of knowledge and skills required by licensed electricians who seek registration to operate as electrical contractors. This unit had 285 enrolments over the five years accreditation period. It is one of two units mandated by the Victorian electrical regulator - Energy Safe Victoria (ESV) for all licensed electricians applying for registration as electrical contractors. The ESV contributed to this review. Other elective VU units retained in the course have also been revised for reaccreditation and imported units have been updated to the current version where required</p> <p>Finally, the PSC recommended the title of the qualification be changed from <i>electrical</i> project management to <i>electrotechnology</i> project management to reflect the breadth of the industry to which the course applies.</p> <p>Due to the changes to the core and elective units the new course: <i>22509VIC - Diploma of Electrotechnology Project Management</i> is deemed to be not equivalent to the current course: <i>22267VIC – Diploma of Electrical Project Management</i>.</p> <p>Transition arrangements between the current and revised course is provided in Table 1</p>
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Table 1: Transition arrangements

22267VIC Diploma of Electrical Project Management		22509VIC Diploma of Electrotechnology Project Management		Comments
Unit code	Unit Title	Unit code	Unit Title	
BSBCUS402B	Address customer needs			Deleted
BSBPMG518A	Manage project procurement	BSBPMG518	Manage project procurement	Equivalent
BSBPUR402B	Negotiate contracts	BSBPRC402	Negotiate contracts	Equivalent
BSBWHS504A	Manage WHS hazards and risks	BSBWHS504	Manage WHS risks	Equivalent

22509VIC Diploma of Electrotechnology Project Management



BSBWOR502B	Ensure team effectiveness	BSBWOR502	Lead and manage team effectiveness	Equivalent
BSBWRT401A	Write complex documents	BSBWRT401	Write complex documents	Equivalent
BSBWRK510A	Manage employee relations	BSBWRK520	Manage employee relations	Equivalent
CPCCBBC5005A	Select and manage building and construction contractors	CPCCBBC5005A	Select and manage building and construction contractors	Equivalent
		CPPBDN5013A	Develop and collaborate on building information models for small-scale building design projects	New unit
PSPGOV511A	Provide leadership	PSPGEN053	Provide leadership	Equivalent
MSS404060A	Facilitate the use of planning software systems in a work area or team	MSS404060	Facilitate the use of planning software systems in a work area or team	Deleted
TLIL4005A	Apply conflict/grievance resolution strategies	TLIL4005	Apply conflict/grievance resolution strategies	Deleted
UEENEEC005B	Estimate eletrotechnology projects	UEENEEC005B	Estimate eletrotechnology projects	Equivalent
UEENEEC006B	Prepare tender submissions for electrotechnology projects	UEENEEC006B	Prepare tender submissions for electrotechnology projects	Equivalent
UEENEEE101A	Apply OHS regulations, codes and practices in the workplace			Deleted
UEENEEG169A	Manage large electrical projects	VU22721	Manage electrotechnology projects	Not equivalent
VU21156	Use computer aided drafting systems			Deleted
VU21525	Conduct electrical project scheduling	VU22722	Schedule multiply electrotechnology project	Not equivalent
VU21526	Provide quotations for installation or service jobs	VU22724	Provide quotations for installation or service jobs	Equivalent

VU21527	Conduct an electrical contracting business	VU22723	Prepare to set up and operate an electrical contracting business	Not equivalent
VU21528	Interpret building and electrical drawings and diagrams	VU22725	Interpret building and electrical drawings and diagrams	Equivalent
VU21529	Comply with relevant regulatory information and building codes			Deleted
VU21530	Conduct electrical efficiency assessments			Deleted
VU21531	Advise on electrical energy management			Deleted
VU21532	Implement energy efficient systems			Deleted
VU21582	Apply energy efficient LED lighting principles			Deleted

4. Course outcomes

Standards 1, 2, 3 and 4 AQTF Standards for Accredited Courses

4.1 Qualification level	<p>This course is consistent with the AQF Level 5 as defined in the Australian Qualifications Framework Second Edition 2013. The Diploma of Electrotechnology Project Management qualifies individuals who apply integrated technical and theoretical concepts in a broad range of contexts to undertake advanced skilled or paraprofessional work and as a pathway for further learning.</p> <p>Knowledge:</p> <p>Graduates of the Diploma of Electrotechnology Project Management will have technical and theoretical knowledge and concepts, with depth in some areas within a field of work and learning such as electrotechnology project management.</p> <p>Skills:</p> <p>Graduates of the Diploma of Electrotechnology Project Management will have:</p> <ul style="list-style-type: none"> • cognitive and communication skills to identify, analyse, synthesise and act on information from a range of sources such as calculating resource requirements and acquiring them • cognitive, technical and communication skills to analyse, plan, design and evaluate approaches to unpredictable problems and/or management requirements such as planning and managing projects in respect to time, cost, quality and resource management
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	<ul style="list-style-type: none"> specialist technical and creative skills to express ideas and perspectives such as producing a progress reports and charts to document project status, milestones and outcomes communication skills to transfer knowledge and specialised skills to others and demonstrate understanding of knowledge such as managing the work of others through positive leadership <p>Application of knowledge and skills:</p> <p>Graduates of the Diploma of Electrotechnology Project Management will demonstrate the application of knowledge and skills:</p> <ul style="list-style-type: none"> with depth in some areas of specialisation, in known or changing contexts such as monitoring and tracking projects to transfer and apply theoretical concepts and/or technical and/or creative skills in a range of situations such as using technology to assist with the management of information and planning process with personal responsibility and autonomy in performing complex technical operations with responsibility for own outputs in relation to broad parameters for quantity and quality such as taking responsibility as required by work role and ensuring all organisational policies and procedures are followed with initiative and judgement to organise the work of self and others and plan, coordinate and evaluate the work of teams within broad but generally well defined parameters such as consulting with clients/customers and stakeholders in scheduling and coordinating a range of electrotechnology projects. <p>Volume of learning:</p> <p>The volume of learning for this qualification is typically 1 to 2 year and incorporates structured training and self-directed learning activities such as reading texts, research and gathering information, completing assignments and project work.</p>
4.2 Employability skills	<p><i>Standard 4 AQTF Standards for Accredited Courses</i></p> <p>The Employability Skills for the Diploma of Electrotechnology Project Management are summarised in Table 2 below.</p>
Table 2: Summary of the Employability Skills	

Employability Skills	Industry/enterprise requirements for this qualification include the following facets. On successful completion of the course a graduate should be able to:
Communication	<ul style="list-style-type: none"> • Participating in negotiations • Managing conflict situations • Managing employee relations • Producing reports
Teamwork	<ul style="list-style-type: none"> • Ensuring team effectiveness • Assigning individual project roles • Setting and monitoring team goals
Problem solving	<ul style="list-style-type: none"> • Establishing and managing business and legal requirements • Establishing and managing contracts • Conducting risk management
Initiative and enterprise	<ul style="list-style-type: none"> • Developing a budget • Managing multi projects • Providing quality services to customers
Planning and organising	<ul style="list-style-type: none"> • Compiling project schedules • Managing the input of sub-contractors to the project • Managing project contingencies • Managing project escalation procedures
Self-management	<ul style="list-style-type: none"> • Managing personal and work priorities • Establishing professional networks • Providing leadership
Learning	<ul style="list-style-type: none"> • Conducting research • Maintaining technical knowledge and skills • Developing and applying electrotechnology industry knowledge
Technology	<ul style="list-style-type: none"> • Operating common information and communication equipment, such as phones and internet • Producing computer-aided drawings • Using project planning and management software
4.3 Recognition given to the course	<p><i>Standard 5 AQTF Standards for Accredited Courses</i></p> <p>Not applicable</p>
4.4 Licensing/regulatory requirements	<p><i>Standard 5 AQTF Standards for Accredited Courses</i></p> <p>No licensing, legislative, regulatory or certification requirements apply to this course at the time of publication.</p>
5. Course rules <p style="text-align: right;"><i>Standards 2, 6,7 and 9 AQTF Standards for Accredited Courses</i></p>	

5.1 Course structure

To be eligible for the award of a Diploma of Electrotechnology Project Management, learners must successfully complete a total of eight (8) units comprising:

- four (4) core units *plus*
- four (4) elective units (see selection advice below)

Learners who do not successfully complete all the required units for the qualification will be issued with a Statement of Attainment listing the completed units.

Unit code	Field of Education code (six-digit)	Unit Title	Pre-requisite	Nominal hours
Core units:				
BSBWRK520	080303	Manage employee relations	None	80
PSPGEN053	120505	Provide leadership	None	50
BSBWRT401	080901	Write complex documents	None	50
VU22721	080315	Manage electrotechnology projects	None	60
Total nominal hours for core unit=				240
Electives units: Select four (4) elective units.				
Two (2) of the four (4) elective units may be selected from any endorsed training packages or accredited courses providing their AQF level maintains the integrity of this course and the units are consistent with the vocational outcomes of the qualification.				
BSBPMG518	080315	Manage project procurement	None	40
BSBPRC402	090901	Negotiate contracts	None	50
BSBWHS504	061301	Manage WHS risks	None	50
BSBWOR502	120505	Lead and manage team effectiveness	None	60
CPPBDN5013A	040303	Develop and collaborate on building information models for small-scale building design projects	None	100
CPCCBC5005A	040303	Select and manage building and construction contractors	None	40
UEENEEC005B	080301	Estimate electrotechnology projects	None	40
UEENEEC006B	080301	Prepare tender submissions for electrotechnology projects	UEENEEC005B	60
VU22722	080399	Schedule multiple electrotechnology projects	VU22722	40

VU22723	031399	Prepare to set up and operate an electrical contracting business	None	60
VU22724	031399	Provide quotations for installation or service jobs	None	40
VU22725	080399	Interpret building and electrical drawings and diagrams	None	40
Total nominal hours range for elective units =				160 –280
Total course nominal hour range =				400 - 520

5.2 Entry requirements	<p><i>Standard 9 AQTF Standards for Accredited Courses</i></p> <p>Although not mandatory, participants best equipped to achieve the outcomes of this course will be electrotechnology tradespersons such as electricians or other industry persons with demonstrated experience in the electrotechnology industry.</p> <p>Participants are also best equipped to achieve the course outcomes if they have a minimum language, literacy and numeracy skills that are equivalent to Level 3 of the Australian Core Skills Framework (ACSF).</p> <p>Full details, descriptors and tests of the ACSF can be found on the website: here.</p>
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6. Assessment	<i>Standards 10 and 12 AQTF Standards for Accredited Courses</i>
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6.1 Assessment strategy	<p>All assessment, including Recognition of Prior Learning (RPL) must be compliant with the requirements of:</p> <ul style="list-style-type: none"> Standard 1 of the Australian Quality Training Framework (AQTF): Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 4.1 and 4.2 of the VRQA Guidelines for VET Providers or the Standards for Registered Training Organisations 2015 (SRTOs) or the relevant standards and guidelines for Registered Training Organisations in effect at the time of assessment <p>Assessment strategies must therefore ensure that:</p> <ul style="list-style-type: none"> all assessments are valid, reliable, flexible and fair learners are informed of the context and purpose of the assessment and the assessment process feedback is provided to learners about the outcomes of the assessment process and guidance given for future options time allowance to complete a task is reasonable and reflect the industry expectations of a junior operator <p>Assessment strategies should be designed to:</p> <ul style="list-style-type: none"> cover a range of skills and knowledge required to demonstrate achievement of the course aim
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	<ul style="list-style-type: none"> • collect evidence on a number of occasions to suit a variety of contexts and situations • be appropriate to the knowledge, skills, methods of delivery and needs and characteristics of learners • assist assessors to interpret evidence consistently • be equitable to all groups of learners <p>Assessment methods are included in each unit and include:</p> <ul style="list-style-type: none"> • oral and/or written questioning • inspection of final process/product outcomes • portfolio of documented evidence • demonstration of required physical tasks <p>A holistic approach to assessment is encouraged. This may be achieved by combining the assessment of more than one unit where it better replicates working practice.</p> <p>Assessment of the imported units must reflect the requirements of the Assessment Guidelines in the relevant training packages.</p>
6.2 Assessor competencies	<p><i>Standard 12 AQTF Standards for Accredited Courses</i></p> <p>Assessment must be undertaken by a person or persons with competencies compliant with:</p> <ul style="list-style-type: none"> • Standard 1.4 of the Australian Quality Training Framework (AQTF): Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 3 of the VRQA Guidelines for VET Providers <p>or</p> <ul style="list-style-type: none"> • the Standards for Registered Training Organisations 2015 (SRTOs), <p>or</p> <ul style="list-style-type: none"> • the relevant standards and guidelines for Registered Training Organisations in effect at the time of assessment <p>Assessors of the imported units must meet the requirements for assessors specified in the relevant training package.</p>
7. Delivery <i>Standards 11 and 12 AQTF Standards for Accredited Courses</i>	
7.1 Delivery modes	<p><i>Standard 11 AQTF Standards for Accredited Courses</i></p> <p>The course is available for full or part-time study. Providers should endeavor to be flexible in the way the training is delivered to ensure they meet the needs of the learner cohort.</p> <p>This course will primarily be delivered in a dedicated training environment rather than on-the-job. Therefore, it is important the facilities within the training environment reflect as close as possible, realistic workplace conditions for the benefit of the students</p> <p>Teaching and learning strategies must be selected to reflect the varying learning requirements, educational backgrounds and preferred learning styles of the individual students and the specific requirements of each unit. Some areas of content may be common to more than one unit and therefore integration may be appropriate.</p> <p>Units of competency may be contextualised to meet the needs of different</p>

	<p>groups of students and employers.</p> <p>Delivery methods may include, but are not limited to:</p> <ul style="list-style-type: none"> • classroom presentation using guest presenters from the electrotechnology industry such as the ESV, NECA • work-based projects • case study analyses • practical project work <p>Delivery and contextualisation of imported units must be consistent with the assessment guidelines of the relevant training package.</p>
7.2 Resources	<p><i>Standard 12 AQTF Standards for Accredited Courses</i></p> <p>The minimum resources required to conduct the course includes:</p> <ul style="list-style-type: none"> • classroom • library and internet access • access to example electrotechnology projects typically found in the workplace • case study materials • example of project management software • reference resources such as current electrical/electrotechnology Standards, WHS/OHS legislation, Australian and State electrical regulations and codes of practice, relevant regulatory authority requirements and Australian building standards. <p>Training must be undertaken by a person or persons with competencies compliant with:</p> <ul style="list-style-type: none"> • Standard 1.4 of the Australian Quality Training Framework (AQTF): Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 3 of the VRQA Guidelines for VET Providers, <p>or</p> <ul style="list-style-type: none"> • the Standards for Registered Training Organisations 2015 (SRTOs), <p>or</p> <ul style="list-style-type: none"> • the relevant standards and guidelines for Registered Training Organisations in effect at the time of assessment. <p>Imported units must reflect the requirements of trainers specified in the relevant training package</p>

8. Pathways and articulation	<p><i>Standard 8 AQTF Standards for Accredited Courses</i></p> <p>There are no formal arrangements for articulation to other VET or higher education qualifications.</p> <p>When arranging articulation providers should refer to the:</p> <p><u>AQF Second Edition 2013 Pathways Policy</u></p> <p>Participants must negotiate individual pathway arrangements directly with the training provider.</p> <p>Applicants who have already successfully completed any endorsed unit of competency from previous study will receive direct credit transfer for the same unit/s in this course. Likewise, graduates of this course will also gain direct credit transfer for units successfully completed, in any future courses containing the same units.</p>
9. Ongoing monitoring and evaluation	<p><i>Standard 13 AQTF Standards for Accredited Courses</i></p> <p>The Diploma of Electrotechnology Project Management is monitored and maintained by the Curriculum Maintenance Manager (CMM) - Engineering Industries.</p> <p>The CMM will undertake a formal review of the course at the mid-point of the accreditation period. The review will involve consultation with:</p> <ul style="list-style-type: none"> • course participants and graduates • electrical/electrotechnology industry representatives • teaching/assessing staff <p>Any significant changes to the course resulting from the review will be reported to the VRQA.</p> <p>The review of the course may also indicate that the course in total should be expired if a suitable qualification becomes available through the continuous improvement of a UEE Electrotechnology Training Package.</p>

Section C: Units of competency

Imported units of competency from National Training Packages are available from:

www.training.gov.au

Unit Code	Unit Title
BSBPMG518	Manage project procurement
BSBPRC402	Negotiate contracts
BSBWHS504	Manage WHS risks
BSBWOR502	Lead and manage team effectiveness
BSBWRK520	Manage employee relations
BSBWRT401	Write complex documents
PSPGEN053	Provide leadership
CPCCBBC5005A	Select and manage building and construction contractors
CPPBDN5013A	Develop and collaborate on building information models for small-scale building design projects
UEENEEC005B	Estimate electrotechnology projects
UEENEEC006B	Prepare tender submissions for electrotechnology projects

Victorian units of competency:

VU22722	Schedule multiple electrotechnology projects
VU22723	Prepare to set up and operate an electrical contracting business
VU22721	Manage electrotechnology projects
VU22724	Provide quotations for installation or service jobs
VU22725	Interpret building and electrical drawings and diagrams

Unit code		VU22722	
Unit title		Schedule multiple electrotechnology projects	
Unit Descriptor		<p>This unit describes the performance outcomes, skills and knowledge required to schedule multiple electrotechnology projects. It covers preparation of a multiple project schedule, implementing and monitoring of the schedule and assessing the outcomes.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>	
Employability Skills		This unit contains Employability Skills.	
Pre-requisite Unit		VU22721 - Manage electrotechnology project	
Application of the Unit		This unit of competency applies to a electrotechnology project manager who is responsible for scheduling and managing multiple projects	
ELEMENT		PERFORMANCE CRITERIA	
<i>Elements describe the essential outcomes of a unit of competency.</i>		<i>Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.</i>	
1	Prepare multiple project schedule	1.1	Requirements, duration, interdependencies and priority of each individual project are assessed from scoping information
		1.2	<i>Relevant State/Territory legislation, regulations, codes and building standards</i> are considered in setting up the <i>multiple project schedule</i>
		1.3	Individual project team leaders and <i>other relevant stakeholders</i> are consulted for their input to the multiple project schedule
		1.4	<i>Risk analysis</i> is undertaken for the projects and appropriate contingency arrangements are established
		1.5	Risk management roles, responsibilities and recovery processes for each project are established
		1.6	<i>Project management software and other resources</i> are selected and used to establish the preferred schedule, time management plan, resource allocation and financial reporting requirements
		1.7	Schedule is finalised and approval is obtained from the <i>higher authority</i> and communicated to all relevant stakeholders

2	Implement and monitor multiple project schedule	2.1	Team leaders are briefed on the operational issues of the schedule and its implementation
		2.2	Ongoing analysis is conducted to identify variances to the schedule and their impact is forecasted
		2.3	Where required schedule changes are introduced based on individual project priorities, objectives and constraints related to time, resource availability and unforeseen events
		2.4	Ongoing monitoring and regular communication with team leaders is carried out until all work is finalised in accordance with the multiple project schedule
3	Assess multiple project schedule outcomes	3.1	Team leaders and other relevant stakeholder feedback is sought to assess the effectiveness of the multiple project schedule to achieve the required outcomes
		3.2	Project management software used to monitor the multiple project activities is evaluated to access its capacity to provide the necessary data and information required throughout the operation
		3.3	Recommended improvements for future multiple project scheduling activities are applied and documented

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- Communicating and relating to a range of people from different social, cultural and ethnic backgrounds and with differing capabilities
- Exercising leadership in an electrotechnology work environment
- Applying personal management skills in the work environment to ensure efficient use of own time
- Scheduling and managing a number electrotechnology projects for a medium to large enterprise
- Undertaking risk analysis to minimise or eliminate potential problems that will impact on safety, quality, time, budget and deliverables
- applying a process of evaluation and welcoming feedback to ensure continuous improvement for multiple project scheduling processes
- Ensuring compliance with relevant WHS/OHS and electrotechnology legislations, regulations and codes of practice
- Meeting compliance requirements with relevant regulatory authorities and building codes

Required knowledge:

- Relevant State/Territory WHS/OHS and electrotechnology legislation, regulations, codes and building standards
- Relevant electrotechnology regulatory authority compliance requirements

<ul style="list-style-type: none"> – Project management scheduling tools and software – Project management concepts and practices – Leadership skills in the workplace – Customer/client relations – Workplace contracts – Performance assessment techniques 	
RANGE STATEMENT	
<p><i>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 in the Performance Criteria is detailed below. Add any 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.</i></p>	
<p>Relevant State/Territory legislation, regulations, codes and building standards may include:</p>	<ul style="list-style-type: none"> – Award and enterprise agreements and relevant industrial instruments – Relevant State/Territory legislation from all levels of government that affects business operation, especially in regard to <ul style="list-style-type: none"> – Occupational Health & Safety – Equal opportunity – Industrial relations – Anti-discrimination – Electrical project management – Relevant industry codes of practice – State/Territory building standards
<p>Multiple project schedule may include:</p>	<ul style="list-style-type: none"> – Deliverables for each project – Labour, materials and resources – Priorities – Interdependencies issues – Duration – Compliance requirements – Costs – Use of sub-contractors – Relationship with other projects – Escalation processes – Risk recovery – Risk assessment
<p>Other relevant stakeholders may include:</p>	<ul style="list-style-type: none"> – Client/customer – Material suppliers – Sub-contractors – Regulatory authority personnel – Enterprise administrative staff
<p>Risk analysis may include:</p>	<ul style="list-style-type: none"> – WHS/OHS issues – Contractual obligations

	<ul style="list-style-type: none"> – Appropriately skilled personnel – Site access – Dependence on other contractors – Environmental problems – Industrial relations issues – Equipment limitations – Resource problems – Delivery problems
Project management software and other resources may include:	<ul style="list-style-type: none"> – Project management software tools such as: <ul style="list-style-type: none"> – Asana – Trello – Basecamp – Omniplan – Todist – Pivotal tracker – Other project management tools such as: <ul style="list-style-type: none"> – Gantt Chart – Logic network – PERT chart – Microsoft XL
Higher authority may include:	<ul style="list-style-type: none"> – Customer/client – Business owner – Senior manager – Engineering team

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>A person who demonstrates competency in this unit must be able to provide evidence of the ability to:</p> <ul style="list-style-type: none"> – Schedule and manage multiple electrotechnology projects for an enterprise that demonstrates: <ul style="list-style-type: none"> – application of multiple project management tools and software – sound time management skills – effective use of resources – Planning and organising labour and materials – ability to liaise and negotiate with customers/clients and other stakeholders – ability to manage risks and unforeseen events – Provide leadership in the workplace and personnel management skills
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	<ul style="list-style-type: none"> – Apply a process of evaluation to ensure continuous improvement of project scheduling processes – Ensure compliance with relevant workplace WHS/OHS legislations, regulations codes of practice – Meet compliance requirements with relevant regulatory authorities and building codes
Context of and specific resources for assessment	<p>Skills will be demonstrated in a safe simulated environment that reflects workplace conditions using suitable facilities, equipment and resource. Assessment must ensure access to:</p> <ul style="list-style-type: none"> – relevant WHS/OHS legislation and regulations – relevant electrotechnology standards – relevant regulatory authority compliance requirements – relevant workplace documentation and procedures – selection of multiple project management tools – the internet.
Method of assessment	<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"> – direct observation of the candidate performing multiple project management tasks consistent with the unit's elements and performance criteria – written and oral questioning to assess underpinning knowledge – third party report/s from an appropriate person e.g workplace supervisor or manager – completion of learning resources and relevant project management documentation.

Unit code		VU22723	
Unit title		Prepare to set up and operate an electrical contracting business	
Unit Descriptor		<p>This unit describes the performance outcomes, skills and knowledge required to prepare to set up and operate an electrical contracting business. It covers the regulatory responsibilities of an electrical contractor as laid down by the relevant State electrical regulatory authority, and the Registered Electrical Contractor (REC) application process.</p> <p>The unit also includes an overview of the various considerations and requirements for setting up and operating an electrical contracting business including the process of a review against a business plan.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>	
Employability Skills		This unit contains Employability Skills.	
Application of the Unit		The knowledge and skills in this unit of competency are applicable to any A grade licenced electrician or other person, who is intending to register as an electrical contractor with the relevant State regulatory authority and operate their own electrical contracting business.	
ELEMENT		PERFORMANCE CRITERIA	
<i>Elements describe the essential outcomes of a unit of competency.</i>		<i>Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.</i>	
1	Determine requirements for registering as an electrical contractor	1.1	Information for registration as an electrical contractor is sought from the relevant State electrical regulatory authority and personal eligibility is assessed
		1.2	Regulatory responsibilities of the relevant State electrical regulatory authority are identified and compliance requirements are evaluated
		1.3	Availability of public liability and income protection insurance to meet at least the minimum amount required by the relevant State electrical regulatory authority are investigated and cost is determined
		1.4	Type of business identity and business name is determined, and the process to register with the Australian Securities and Investments Commission (ASIC) is determined.
		1.5	Supervision options for the management and administration of an electrical contracting business as

			required for registration are examined and selected to meet own requirements
2	Set up model electrical contracting business	2.1	Focus of the electrical contracting business is established from investigation of the market opportunities and the geographical boundaries of the service area are decided
		2.2	A model business plan is prepared to guide development and growth of the contracting business
		2.3	Business branding and marketing options are explored and choices are made in line with a start-up budget
		2.4	Job management application tools are investigated and a suitable tool is selected
		2.5	The services of professional organisations which represent the interests and needs of electrical employers and contractors are assessed and the value of membership is considered against a business plan
		2.6	Relevant industry standards and workplace health and safety/occupational health and safety (WHS/OHS) regulations which impact on the day to day operations of the business are identified
		2.7	Work related resources are reviewed to ensure they are in good condition and adequate for the day to day operation of a contracting business
		2.8	Trade suppliers of electrical equipment, consumables and hardware are identified and the requirements of setting up an account/s for the day to day operation of the business are investigated
3	Operate a model electrical contracting business	3.1	Customer/client work and/or quotation requests are handled in timely and friendly manner
		3.2	High standard of personal presentation and tidy work habits are followed to meet customer/client expectations
		3.3	All electrical installation and repair work undertaken by the contractor compiles with the relevant electrical standards, regulations and inspection is arranged as required
		3.4	Certificate of Electrical Safety (COES) is issued to customers/client for completed work and copy lodged with the regulator in accordance with relevant State regulatory authority requirements
		3.5	The relevant electrical regulatory authority requirements for registering licensed electrical installation workers engaged by the contractor (if any) is determined and followed

		3.6	Work scheduling and invoicing is carried out in a timely manner and any outstanding payments are followed up
		3.7	A process for dealing with customer/client complaints in a timely manner is investigated and implemented
4	Review operation of a model contracting business	4.1	In conjunction with a business supervisor typical work activity is reviewed against a proposed business plan to evaluate the progress of the business
		4.2	Opportunities for expanding business operations are identified and advantages and disadvantage of each option are considered
		4.3	Business promotion and marketing choices are reviewed to determine the most effective options for ongoing and new work opportunities
		4.4	A process for the maintenance of trade skills and knowledge of electrical standards and regulations is implemented and followed
		4.5	Work-life balance is reviewed to ensure own health and well-being is being considered

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- meeting requirements to gain registration as an electrical contractor
- appointing a business accountant and developing a start-up plan for an electrical contracting business
- selecting and organising business marketing and branding
- reviewing, selecting and utilising a job management application tool
- meeting and conversing with customers/client to advise on their electrical needs
- assessing customer/client electrical requirements and preparing written quotations
- quoting on and carrying out all electrical installations and repair work in-line with relevant electrical standards and regulations and WHS/OHS requirements
- monitoring day to day work activities, invoicing and payments to assist with adequate cash flow for business operations and personal income
- reviewing business activities (in conjunction with business accountant) to assess profitability, expansion options, branding and marketing activities
- maintaining own trade knowledge and skills through ongoing professional development
- maintaining work–life balance for own well being

Required knowledge:

- role and responsibility of the State electrical regulatory authority
- regulatory responsibilities for Registered Electrical Contractors (REC)
- relevant electrical standard, regulation and codes for electrical installation and repairs work
- requirements and responsibilities for setting up and operating an electrical contracting business
- purpose for public liability and personal income insurance

<ul style="list-style-type: none"> – branding and marketing a small business – role of a business accountant/supervisor – professional organisations which service the needs of electrical contractors – factors impacting the successful operation of an electrical contracting business – factors that contribute to own health and well being 	
RANGE STATEMENT	
<p><i>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 in the Performance Criteria is detailed below. Add any 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.</i></p>	
Relevant State electrical regulatory authority may include:	<ul style="list-style-type: none"> – VIC – <i>Energy Safe Victoria</i> – NSW -<i>Fair Trading</i> – QLD - <i>WorkSafe</i> – SA – <i>State Government</i> – WA – <i>Energy Safety</i> – TAS – <i>Department of Justice</i> – ACT – <i>Environment and Planning</i> – NT – <i>Electrical Workers and Contractors Licensing Board</i>
Regulatory responsibilities include:	<p>There are a number of regulatory obligations a registered electrical contractor (REC) must comply with to maintain registration. These are determined by the relevant State regulatory authority and may vary from State to State.</p> <p>For Victoria a copy of the responsibilities is available from Energy Safe Victoria (ESV)</p>
Business identity: may include	<ul style="list-style-type: none"> – individual/sole trader – partnership – company – trust
Focus of the electrical contracting business may include	<ul style="list-style-type: none"> – general domestic repairs and installation – new builds – renovations – commercial fit out – insurance installations – Government contracts – renewable energy systems installations and grid connections

Geographical boundaries of the service area may include:	<ul style="list-style-type: none"> – local residential area – region e.g south eastern suburbs – all metropolitan areas – own country locality – state wide
Business plan may include:	<ul style="list-style-type: none"> – executive summary – business description – market/competitive analysis – business management arrangements – business legal responsibilities and obligations – funding requirements – financial projections
Branding and marketing may include:	<ul style="list-style-type: none"> – Business logo for stationery – Vehicle signage – Local newspaper advertisement – Website – Facebook page/ads – Local billboard and/or shop front signage – Trade directory – Letterbox drop – Word of mouth
Job management application tools may include:	<ul style="list-style-type: none"> – Tradify – Geoop – ServiceM8 – Aroflo
Professional organisations may include:	<ul style="list-style-type: none"> – National Electrical and Communication Association (NECA) – Electrical Trades Union (ETU) – Master Electricians Australia (MEA)
Industry standards and workplace health and safety/occupational health and safety (WHS/OHS) regulations may include:	<ul style="list-style-type: none"> – AS/NZS 3000 Wiring Rules – Electricity (Consumer Safety) Act 2004 – Electrical Safety (installation) Regulations – Electrical Safety (Registration and Licensing) Regulations – Victorian Electricity Distribution Service and Installation Rules

Work related resources may include:	<ul style="list-style-type: none"> – hand and hand held power tools – testing equipment/instrumentation – ladders – personal protective equipment (PPE) – electrical service materials – maintained service vehicle/s – communication/computer devices
Quotation may include:	<ul style="list-style-type: none"> – labour own and sub-contractor/s if required – travel – consumable/materials – parts and/or components – fittings and fixtures – inspection costs – profit margin – good and service tax (GST)
Certificate of Electrical Safety (COES)	<ul style="list-style-type: none"> – The Electricity Safety Act and Electricity Safety (Installations) Regulations require a Certificate of Electrical Safety (COES) to be issued for all electrical installation work.
Opportunities for expanding business operations may include:	<ul style="list-style-type: none"> – partnership with another contractor or relevant small business person – employing staff e.g. licensed electrician/s – taking on an apprentice/s – expanding the geographical cover of the service area – expanding the nature of the electrical work into a new area/s e.g. renewable energy systems, commercial fit outs, government contracts etc.
Work-life balance may include:	<ul style="list-style-type: none"> – family time – maintenance of interest/s outside work e.g. sport – health and fitness – social activities

EVIDENCE GUIDE	
<p><i>The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.</i></p>	
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>A person who demonstrates competency in this unit must be able to provide evidence they have the skills and knowledge to:</p> <ul style="list-style-type: none"> – assess the regulatory requirements to become registered electrical contractor (REC) and determined their own eligibility and ability to comply – investigate and be able to comply with the regulatory responsibilities of a REC – set up and operate their own model electrical contracting business which complies with all legal, WHS/OHS and regulatory requirements.
<p>Context of and specific resources for assessment</p>	<p>This unit may be assessed on the job, off the job or a combination of both on and off the job.</p> <p>Where assessment occurs off the job, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations.</p> <p>The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.</p> <p>The candidate will have access to all tools, equipment, materials and documentation required. The candidate will be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.</p>
<p>Method of assessment</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"> – direct observation of the candidate – performing written and oral questioning to test underpinning knowledge – testimony from appropriately qualified person/s – portfolio of documented evidence <p>Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency.</p>

Unit code		VU22721	
Unit title		Manage electrotechnology projects	
Unit Descriptor		<p>This unit describes the performance outcomes, skills and knowledge required to oversee and control various electrotechnology projects.</p> <p>The unit includes determining the project parameters, development of a project plan, managing a work team, overseeing compliance and safety issues, implementing risk control measures, procurement of resources, projects administration and monitoring, finalising and evaluating the project.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>	
Employability Skills		This unit contains Employability Skills.	
Application of the Unit		This unit of competency applies to a person working as a project manager in a sector of the electrotechnology industry either as an employee of a small to medium enterprise or as a freelance contractor	
ELEMENT		PERFORMANCE CRITERIA	
<i>Elements describe the essential outcomes of a unit of competency.</i>		<i>Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.</i>	
1	Determine the scope of the project	1.1	Plans, specifications and other relevant <i>electrotechnology project</i> documentation are accessed and reviewed
		1.2	<i>Relevant regulatory authority</i> requirements and electrotechnology standards are identified and reviewed to ensure compliance is addressed in project deliverables
		1.3	Project deliverables are defined and clarified with the <i>appropriate person</i>
		1.4	Limits of own responsibilities and authority are discussed and clarified with the appropriate person
		1.5	Equipment, materials and skills for the project are determined and costs are estimated
		1.6	Sub-contractors if required for the project are invited to submit quotes for their work component

		1.7	Project's operational relationship with others projects is determined and clarified with the appropriate person
		1.8	Process and procedure to deal with project/contract variations are clarified with the appropriate person
		1.9	Project contract including deliverables, budget and timelines (including penalties if any) are confirmed and endorsed with the appropriate person
2	Develop a project work plan	2.1	Project milestones/stages and client change processes are defined and the required resources, outcomes, cost and timelines are determined for each stage
		2.2	Appropriate project management tools are evaluated and a suitable management tool is selected and applied
		2.3	Relevant WHS/OHS policies and procedures are identified and addressed in the project work plan
		2.4	Quality assurance and risk control measures including recovery responsibilities for each stage of the project are identified and included in the project work plan
		2.5	Draft project work plan is prepared and discussed with project team and feedback is sought
		2.6	Project work plan is finalised and documented in accordance to enterprise procedure and if required approval to commence work is sought from the appropriate person
3	Implement project work plan	3.1	Team members are briefed on their project responsibilities, WHS/OHS requirements and projects outcomes
		3.2	Equipment, materials, and tools required for the commencement of the project are sourced and delivered to the work site
		3.3	Each stage of the project is implemented according to the work plan and progress is monitored using selected management tool
		3.4	Work quality, WHS/OHS compliance, project costs and outcomes are also monitored and assessed using selected management tool
		3.5	Procurement processes are supervised to ensure timely supply of equipment and materials in accordance with work plan requirements

		3.6	Unforeseen risk events and/or safety issues are responded to promptly in accordance to work plan and enterprise procedures to ensure safety of team members, maintenance of project work quality, budget and timelines
		3.7	Conflict issues that may arise at the work site with stakeholders are addressed promptly and managed according to enterprise policy and procedures
		3.8	Project variations as they arise are discussed with work team and appropriate person and managed within the work plan and in accordance with established procedure
		3.9	Project team briefing meetings are held at agreed times to discuss project progress and to identify and address any issues or concerns raised by team members
		3.10	Project records are maintained in accordance to enterprise procedure and progress updates are provided to the appropriate person in accordance to the project work plan
4	Finalise project work	4.1	Completed project is reviewed with team members against work plan to ensure all outcomes have been achieved
		4.2	Equipment, tools and left over materials are collected, checked and returned to storage in accordance with enterprise procedure and work site/area is left in a safe and secure condition
		4.3	Required electrical work documentation is completed and submitted to the regulatory authority
		4.4	Project completion is sought from the appropriate person and hand over documentation is completed in accordance with enterprise procedure
5	Review project management process	5.1	Project team including sub-contractors are invited to review the project outcomes, including various processes and procedures and to provide feedback on what worked well and areas for improvement
		5.2	Feedback and opportunities for improvements for future projects are documented
		5.3	Project report is prepared and submitted to the appropriate person in accordance to enterprise procedure

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- Assembling, reviewing relevant documentation and accurately scoping an electrotechnology project
- Developing and implementing an electrotechnology project work plan
- Coordinating and managing a project team including the engagement of sub-contractors
- Managing work place conflicts and unforeseen events that impact on project timelines, budget or outcomes
- Dealing with project variations in a timely and efficient manner
- Managing relevant regulatory authority requirements and inspections to ensure compliance of project outcomes
- Managing WHS/OHS requirements to ensure compliance and a safe workplace at all times
- Selecting and applying appropriate project management tools to aid and assist with the achievement of project outcomes within the required timeframe and budget
- Managing project communications, record keeping and relevant compliance documentation
- Conducting a project review and implementing strategies for continuous improvement

Required knowledge:

- Project management resources such as: PMBOK Guide
- Project management tools and software
- Regulatory authority requirements for the electrotechnology industry
- Applicable workplace WHS/OHS requirements
- Applicable industry standards and regulations
- Project planning concepts and practices which includes:
 - defining parameters
 - time management
 - financial management
 - quality management
 - human resource management
 - physical resource management
 - communications management
 - risk management
- Procurement concepts and practices
- Workplace contracts encompassing:
 - contract format
 - contract content and specifications
 - interpreting clauses

<ul style="list-style-type: none"> – legal obligations of contract parties – Performance assessment techniques – Customer/client relations 	
RANGE STATEMENT	
<p><i>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 in the Performance Criteria is detailed below. Add any 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.</i></p>	
<p><i>Electrotechnology project</i> may include:</p>	<ul style="list-style-type: none"> – Commercial and Industrial electrical installations e g factory/plant complex, multi-storey complex – Commercial or residential telecommunication installation – Automated production plant including robotics – Air-conditioning service installation in multi-storey residential complex – Renewable energy system installations
<p><i>Relevant regulatory authority</i> may include</p>	<ul style="list-style-type: none"> – Environmental Protection Authority (EPA) – Australian Communications and Media Authority (ACMA) – Electrical regulatory authority e g Energy Safe Victoria (ESV)
<p><i>Appropriate person</i> may include</p>	<ul style="list-style-type: none"> – Customer – Client – Business owner – Workplace Manager
<p><i>Project management tools</i> may include</p>	<ul style="list-style-type: none"> – Project management tools include: <ul style="list-style-type: none"> – Gantt Chart – Logic network – PERT chart – Microsoft XL – Project management software tools include: <ul style="list-style-type: none"> – Asana – Trello – Basecamp – Omniplan – Todist – Pivotal tracker

Project work plan may include	<ul style="list-style-type: none"> – Scope Statement – Critical Success Factors – Deliverables – Work Breakdown Structure – Schedule – Budget – Quality and compliance – Human Resources Plan – Stakeholder List – Communication – Risk Register – Procurement Plan
Team members may include	<ul style="list-style-type: none"> – Engineers – Technicians – Tradespersons – Technical officers – Apprentices/trainees – Administrative personnel – Production personnel
Stakeholders may include	<ul style="list-style-type: none"> – Customer/Client – Own project personnel – Personnel from another project – Contractors – Regulatory authority representative – Union representative

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>A person who demonstrates competency in this unit must be able to provide evidence of the ability to:</p> <ul style="list-style-type: none"> – manage an electrotechnology project on at least two occasions in different contexts that includes: <ul style="list-style-type: none"> – establishing the scope of the project – developing effective management processes to ensure the deliverables are achieved in a determined timeframe and within budget – meet all relevant WHS/OHS and regulatory authority compliance requirements
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Context of and specific resources for assessment	<p>Skills will be demonstrated in either a workplace or simulated environment that reflects workplace conditions using suitable facilities, equipment and resources. Assessment must ensure access to:</p> <ul style="list-style-type: none"> – relevant WHS/OHS legislation and regulations – relevant electrotechnology standards – relevant regulatory authority compliance requirements – relevant workplace documentation and procedures – selection of project management tools – the internet.
Method of assessment	<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"> – direct observation of the candidate performing project management tasks consistent with the unit's elements and performance criteria – written and oral questioning to assess underpinning knowledge – third party report/s from an appropriate person e.g workplace supervisor or manager – completion of learning resources and relevant project management documentation.

Unit code		VU22724	
Unit title		Provide quotation for installation and service jobs	
Unit Descriptor		<p>This unit describes the performance outcomes, skills and knowledge required to provide quotations for installation and service work. This includes determining the extent of the job requirements, using suppliers' catalogues, making enquiries, selecting materials complying with the job specifications, determining regulatory responsibilities, estimating direct and indirect costs; completing quotation documentation and maintaining good customer relations</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>	
Employability Skills		This unit contains Employability Skills.	
Application of the Unit		This unit of competency applies to contractors in the electrotechnology industry where competitive quotations for installation and service jobs are required.	
ELEMENT		PERFORMANCE CRITERIA	
<i>Elements describe the essential outcomes of a unit of competency.</i>		<i>Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.</i>	
1	Establish the extent of the work	1.1	The extent of <i>installation or service work</i> is determined from discussions with the <i>customer/client</i> , job specifications and/or plans.
		1.2	<i>WHS/OHS and regulatory requirements</i> are incorporated into the extent of the work on which the quotation is based.
		1.3	Requests for alterations to the job specification are negotiated with the customer/client and within the constraints imposed by regulatory requirements, if required.
		1.4	Date by which the quotation is to be submitted is agreed with the customer/client.
		1.5	Activities are planned to meet scheduled timeframe in consultation with others involved in the work.
2	Develop quotations	2.1	Material take offs are performed accurately and checked against job specification.
		2.2	Materials, labour and other costs are determined from industry standard labour rates, enterprise costing arrangements and materials suppliers.
		2.3	If required the extent of any work to be sub contracted is determined and quotations are sought from relevant sub-contractor/s

		2.4	Regulatory authority inspections and compliance requirements and others costs such as insurance are determined
		2.5	Potential for unseen or unplanned events are determined and an allowance is estimated
		2.6	Individual costings and allowances are documented and tallied to establish a total price for the planned work
		2.7	Final quotation is checked for accuracy against job specification.
3	Provide quotations.	3.1	Quotation is submitted to the customer/client by the agreed date.
		3.2	Any follow up queries from the customer/client are responded to in a timely manner

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- reviewing and assessing an installation or service job requirements and related information to determine the parameters of the planned work
- calculating material take-offs and labour costs accurately
- estimating contingencies and regulatory authority compliance costs
- communicating technical requirements to sub-contractors and others to determine accurate costs for the planned work
- accurately preparing and submitting completed quotation by the agreed time

Required knowledge:

- industry standard for labour costs within the relevant electrotechnology sector
- electrotechnology materials costs wastage allowances
- chargeable and non-chargeable hours
- insurance and compliance requirements and associated costs
- industry standards on overhead costs; and profit margins
- potential for unseen/unplanned events and implications for the costing of the planned work
- costing software packages and their application.

RANGE STATEMENT	
<p><i>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 in the Performance Criteria is detailed below. Add any 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.</i></p>	
<p><i>Installation or service work</i> may include:</p>	<ul style="list-style-type: none"> – General domestic repairs and installations – New builds – Renovations – Commercial fit out – Insurance installations – Government contracts – Renewable energy systems installations and grid connections
<p><i>Customer/client</i> may include:</p>	<ul style="list-style-type: none"> – Private domestic customer – Enterprise owner/manager – Building contractor – Government Department (Federal, State, local) – Insurance companies
<p><i>WHS/OHS and regulatory requirements</i> may include</p>	<ul style="list-style-type: none"> – Award and enterprise agreements and relevant industrial instruments – Relevant State/Territory legislation from all levels of government that affects business operation, especially in regard to: <ul style="list-style-type: none"> – Occupational Health & Safety – Equal opportunity – Industrial relations – Anti-discrimination – Electrical project management – Relevant industry codes of practice – State/Territory building standards

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>A person who demonstrates competency in this unit must be able to provide evidence of the ability to provide quotation for installation and service work on at least two occasions and in different contexts. The demonstration of competence must show:</p> <ul style="list-style-type: none"> – an accurate assessment of the extent of the required work – accurate estimate of the required materials, labour and other related costs e.g insurance, inspections, contingencies etc. for the work required – calculation for a reasonable profit margin – preparation and recording of the final figures for the quotations; – a completed and documented quotation
Context of and specific resources for assessment	<p>Skills can be demonstrated in a real or simulated environment that reflects workplace conditions using suitable facilities, equipment and resources. Assessment must ensure access to:</p> <ul style="list-style-type: none"> – internet – supplier catalogues – relevant regulatory requirements – industry standards, regulations, codes of practices
Method of assessment	<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"> – direct assessment of the candidate's work – written and oral questioning to test underpinning knowledge – testimony from appropriately qualified person – portfolio of documented evidence of candidate's estimating and quoting experience

Unit code		VU22725	
Unit title		Interpret building and electrical drawings and diagrams	
Unit Descriptor		<p>This unit describes the performance outcomes, skills and knowledge required to gather relevant information for an electrotechnology project from building and electrical drawings. The unit includes sourcing the required drawings and diagrams, interpreting and analysing the information and passing it on to the relevant persons in order to achieve the required project outcomes. The unit also includes the preparation of freehand sketches to aid communication.</p> <p>No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.</p>	
Employability Skills		This unit contains Employability Skills.	
Application of the Unit		This unit of competency applies to an electrotechnology project manager who is responsible for co-ordinating various project activities to meet a specified outcome.	
ELEMENT		PERFORMANCE CRITERIA	
<i>Elements describe the essential outcomes of a unit of competency.</i>		<i>Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide.</i>	
1	Access relevant building and electrical drawings and diagrams	1.1	<i>Relevant drawings and diagrams</i> pertaining to the project are identified
		1.2	<i>Appropriate protocols</i> are followed to access the drawings and diagrams
		1.3	Drawing and diagram numbering system and dates are checked/validated to ensure latest version of each drawing and diagram is obtained
2	Use drawings and diagrams to obtain relevant project information	2.1	Drawing and diagrams are analysed and interpreted using knowledge of projections, layouts, conventions and symbols
		2.2	Dimensions are extracted from drawing and diagrams for application to the project work being undertaken
		2.3	<i>Key stakeholders</i> are consulted for their input to the interpretation of the drawings and diagrams in relation to the project outcomes

3	Convey relevant project information from drawings and diagrams to other project personnel	3.1	Freehand 2D/3D sketches are prepared with minimal complexity to convey required information and ideas to others involved in the project
		3.2	Dimensions and notes are added to describe and convey project requirements
		3.3	Freehand sketches are reviewed and discussed with recipient/s to ensure clarity of requirements and adjustments are made if required
		3.4	Any required amendments to original drawings and diagrams are noted in accordance to established procedure and forwarded to the appropriate person

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Required skills:

- reading, interpreting and communicating information from building and electrical drawings and diagrams
- preparing dimensioned 2D and 3D free hand sketches using standard drawing conventions to convey information to others
- applying appropriate protocols to access required drawings and diagrams and requesting amendments
- consulting and communicating with a range of project personnel

Required knowledge:

- drawing standard AS1100.101
- drawing layouts, symbols and conventions associated with both building and electrical drawings
- suitable sketching media
- communication techniques

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 in the Performance Criteria is detailed below. Add any 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.

Relevant drawings and diagrams may include:

- architectural drawings
- mechanical and duct layout
- mechanical services and ducting plans
- electrical circuit diagrams
- equipment location diagrams

Appropriate protocols may include	<ul style="list-style-type: none"> – project site rules – enterprise/drawing office procedures – relevant line of communication
Key stakeholders may include	<ul style="list-style-type: none"> – client/customer – manager – project staff – sub-contractors – regulatory authority personnel – personnel from another related project
Appropriate person may include:	<ul style="list-style-type: none"> – client/customer – own manager – manager of drawing office – head draftsman

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment Guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>A person who demonstrates competency in this unit must be able to provide evidence of the ability to:</p> <ul style="list-style-type: none"> – apply appropriate protocols to access required drawings and diagrams for a specific electrotechnology project – read, interpret and communicate information from building and electrical drawings and diagrams – prepare dimensioned 2D and 3D free hand sketches using standard drawing conventions to convey information to others
Context of and specific resources for assessment	<p>Skills will be demonstrated in a safe simulated environment that reflects workplace conditions using suitable facilities, equipment and resource. Assessment must ensure access to:</p> <ul style="list-style-type: none"> – building and electrical drawings and diagrams – building regulations and codes – electrical regulatory requirements – drawing standard AS1100.101 – freehand drawing media/drawing equipment

Method of assessment	<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"> – direct observation of the candidate's ability to read and interpret information from building and electrical drawings – performing written and oral questioning to test underpinning knowledge of drawing layouts ,symbols and conventions – demonstration of 2D/3D free hand sketching ability
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Appendix 1

Electrotechnology project management - skills and knowledge summary

Project management:

- Define the scope of the project
- Develop a project plan
- Maintain project records and produce project reports
- Prepare project budget and monitor and control project costs
- Schedule project activities and monitor timelines
- Read building and electrical drawings and related project information
- Facilitate ongoing relationship with clients
- Determine and monitor project quality requirements
- Conduct and manage procurement activities
- Negotiate and prepare a project contract
- Implement and monitor quality control and assurance processes
- Operate commercial project management software packages

Staff management:

- Build and lead a team
- Facilitate and support team work
- Apply effective communication and interpersonal skills
- Manage the selection, engagement and monitoring of sub-contractors
- Manage employee relations issues
- Use appropriate conflict resolution strategies
- Manage and oversee WHS/OHS issues

Electrical Contracting:

Skills:

- Operate a small contracting business
- Prepare a quotation for a job
- Negotiate with a client
- Assist a client to articulate their needs
- Manage and supervise staff (employed tradespersons and apprentices)
- Use commercial business management software packages
- Interpret and apply relevant standards, regulations and codes for electrical work
- Work with other sub-contractors
- Arrange electrical inspections and meet regulatory responsibilities

Knowledge:

- Legal obligations for conducting an electrical contracting business
 - BAS (Business Activity Statement)
 - taxation
 - workcover/insurances
 - superannuation
 - wages
- Standards, regulations and codes of practice for electrical contractors
- Relevant WHS/OHS responsibilities
- Regulatory responsibilities
- Costing a job