

22609VIC Course in Electric Vehicle Charging Infrastructure up to 22kW

Version 1.1

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

Accredited for the period:1/11/2022 to 31/10/2027

Version History		
Version 1.1	Day-to-day contact details updated to reflect copyright owner	January 2024
Version 1	Original accreditation	November 2022

Table of contents

Section A – Copyright and course classification information	1
1. Copyright owner of the course.....	1
2. Address.....	1
3. Type of submission	1
4. Copyright acknowledgement	1
5. Licensing and franchise	1
6. Course accrediting body	2
7. AVETMISS information.....	2
8. Period of accreditation	2
Section B – Course information	3
1. Nomenclature.....	3
1.1 Name of the qualification	3
1.2 Nominal duration of the course.....	3
2. Vocational or educational outcomes.....	3
2.1 Outcome(s) of the course	3
2.2 Course description	3
3. Development of the course.....	3
3.1 Industry, education, legislative, enterprise or community needs.....	3
3.2 Review for re-accreditation	6
4. Course outcomes.....	6
4.1 Qualification level.....	6
4.2 Foundation skills	6
4.3 Recognition given to the course (if applicable).....	6
4.4 Licensing/regulatory requirements (if applicable)	6
5. Course rules.....	6
5.1 Course structure	7
5.2 Entry requirements	7
6. Assessment	7
6.1 Assessment strategy	7
6.2 Assessor competencies.....	8
7. Delivery	8
7.1 Delivery modes	9
7.2 Resources.....	9
8. Pathways and articulation	10
9. Ongoing monitoring and evaluation	10
Section C – Units of competency.....	11

Section A – Copyright and course classification information

1. Copyright owner of the course	<p>Copyright of this material is reserved to the Crown in the right of the State of Victoria on behalf of the Department of Jobs, Skills, Industries and Regions (DJSIR) Victoria.</p> <p>© State of Victoria (DJSIR) 2022</p>
2. Address	<p>Deputy CEO:</p> <p>Victorian Skills Authority Department of Jobs, Skills, Industry and Regions (DJSIR) GPO Box 4509 Melbourne Vic 3001</p> <p>Organisational Contact:</p> <p>Manager, Training and Learning Products Unit Engagement Branch, Victorian Skills Authority Department of Jobs, Skills, Industry and Regions (DJSIR) Email: course.enquiry@djsir.vic.gov.au</p> <p>Day-to-day contact:</p> <p>Curriculum Maintenance Manager – Engineering/Electrical Industries Box Hill Institute of TAFE Private Bag 2014 Box Hill Victoria 3128 Ph:(03) 9286 9880 Email: cmmei@boxhill.edu.au</p>
3. Type of submission	<p>This submission is for accreditation</p>
4. Copyright acknowledgement	<p>Copyright of this material is reserved to the Crown in the right of the State of Victoria. © State of Victoria (Department of Jobs, Skills, Industry and Regions) 2022.</p> <p>This work is licensed under a Creative Commons Attribution-No Derivatives 4.0 International licence (see Creative Commons for more information).</p>
5. Licensing and franchise	<p>Copyright of this material is reserved to the Crown in the right of the State of Victoria. © State of Victoria (Department of Jobs, Skills, Industry and Regions) 2022.</p> <p>This work is licensed under a Creative Commons Attribution-No Derivatives 4.0 International licence (see Creative Commons for more information).</p>



	<p>You are free to re-use the work under the licence, on the condition that you credit the State of Victorian (Department of Jobs, Skills, Industry and Regions), provide a link to the licence, indication if changes were made, and comply with all other licence terms. You must not distribute modified material.</p> <p><i>Request for other use should be addressed to:</i></p> <p>Deputy CEO</p> <p>Victorian Skills Authority</p> <p>Department of Jobs, Skills, Industries and Regions (DJSIR)</p> <p>Email: course.enquiry@djsir.vic.gov.au</p> <p>Copies of this publication can be downloaded free of charge from the Victorian Government website.</p>
6. Course accrediting body	Victorian Registration and Qualifications Authority
7. AVETMISS information	<p>ANZSCO code</p> <p>Australian and New Zealand Standard Classification of Occupations</p> <p>341111 Electrician (General)</p> <p>ASCED Code</p> <p>Field of Education</p> <p>0313 Electrical and Electronic Engineering and Technology</p> <p>National course code</p> <p>22609VIC.</p>
8. Period of accreditation	1 November 2022 to 31 October 2027



Section B – Course information

1. Nomenclature	Standard 4.1 and 5.8 AQTF 2021 Standards for Accredited Courses
1.1 Name of the qualification	Course in Electric Vehicle Charging Infrastructure up to 22kW
1.2 Nominal duration of the course	12 nominal hours
2. Vocational or educational outcomes	Standard 5.1 AQTF 2021 Standards for Accredited Courses
2.1 Outcome(s) of the course	<p>The 22609VIC Course in Electric Vehicle Charging Infrastructure up to 22 kW is designed to provide licenced electricians with the skills and knowledge to:</p> <ul style="list-style-type: none"> consult with clients regarding electric vehicle charging infrastructure (EVCI) requirements assess the potential integration of new EVCI with existing residential and (small) commercial electrical installations design and propose compliant EVCI according to consumer requirements assess options, test and commission appropriate EVCI according to usage, configuration and budgetary requirements.
2.2 Course description	<p>The 22609VIC Course in Electric Vehicle Charging Infrastructure up to 22kW provides training for licenced electricians wanting to develop skills and knowledge to design compliant electric vehicle charging infrastructure (EVCI) installations to support client requirements, and test and commission EVCI installations up to 22kW alternating current (a.c.).</p>
3. Development of the course	Standards 4.1, 5.1, 5.2, 5.3 and 5.4 AQTF 2021 Standards for Accredited Courses
3.1 Industry, education, legislative, enterprise or community needs	<p>Industry need</p> <p>Since the recognition of global warming and the subsequent inception of zero emission targets, consumers have opted for ways to live 'cleaner', and interest in the electric vehicle (EV) industry has emerged. As evidenced by the EV Council's Consumer Attitudes Survey 2021 (p.3), '54% of Australian's would consider purchasing an electric vehicle as their next car¹.</p> <p>The Victorian Government has initiated a range of policies/key incentivise uptake of 'zero emission vehicles' (ZEV) in order to meet</p>

¹ <https://thedriven.io/2021/12/06/nine-out-of-ten-new-car-sales-will-be-electric-in-2030-under-labor-plan/>

carbon reduction commitments e.g. launch of the zero emissions vehicle subsidy, setting of sustainable targets for light vehicle sales, electric bus purchases for public transport purposes, EVCI roll out and Government electric car fleet uptake. Refer:

- Victoria's Zero Emissions Vehicle Roadmap, p.7 which tables a \$100 million dollar package of policies/programs/actions to achieve renewable energy targets e.g. "50 per cent of new light vehicle sales to be zero emissions by 2030."
- The Australian Infrastructure Plan 2021, Reforms to meet Australia's future infrastructure needs, p.343 for EVC infrastructure to support normalisation of electric vehicle use. Recognition and promotion of electric vehicle usage is made in part 4 of Federal transport reforms whereby new mobility technologies will be considered in the design of cities and towns "to make electric vehicle recharging easy and commonplace and road networks ready for connected and autonomous fleets", p.312".

These incentives are expected to create rapid uptake of EV purchases over the next decade and beyond in Australia. Currently electric vehicles make up only 2 per cent of 'new car' sales nationally. By 2030 the Federal government expects that to increase to at least 89 per cent². This is supported by recent consumer attitude surveys that reveal 54 per cent of Australian's would consider purchasing an electric vehicle as their next car³.

The purchase of electric vehicles is best supported by associated charging infrastructure to be designed and installed where they are garaged. For residential and small commercial contexts, this activity is limited at present to EVCI with a maximum charging capacity of 22kW alternating current (a.c.). Appropriately trained electricians are needed to assess the compatibility and integration of the new EVCI with the existing wiring configurations of homes and small commercial businesses. This facilitates the design and commission of a compliant EVCI system for installation that supports the consumer's requirements, and then testing and commissioning the EVCI post installation.

A skill gap emerged in this area due to new knowledge and skill associated with EVCI product, technology and safe work practices. Professional development of existing electricians is required to meet these new competencies. Participation in the accredited course, 22609VIC Course in Electric Vehicle Charging Infrastructure up to 22kW, will provide consumers with access to a pool of specifically trained EVCI personnel who can design, test and commission EVCI safely and effectively.

Target group / cohort

² <https://thedriven.io/2021/12/06/nine-out-of-ten-new-car-sales-will-be-electric-in-2030-under-labor-plan/>

³ <https://electricvehiclecouncil.com.au/reports/consumer-attitudes-survey-2021/>, p.1

The cohort targeted for entry into the Course in Electric Vehicle Charging Infrastructure up to 22kW is those that hold an Electrician's licence (A grade) or equivalent as per jurisdictional requirements. Holders of this licence have successfully completed the licensing and registration requirements that apply to the relevant State/Territory regulatory body. This is required to work on the design of electrical installations, which operate at voltages greater than 50 volt (V) alternating current (a.c.) or 120 V direct current (d.c.).

Course demand

A successful Workforce Training Innovation Fund application of EVCI industry partners, including two training providers, proposes to upskill 500 electricians in the safe and effective design, test and commissioning of EVCI installation up to 22 kW. In so doing they will provide skilled educators for the future delivery of EVCI training post project.

Course consultation and validation process

A number of activities were undertaken by course developers to support drafting of course content for Project Steering Committee (PSC) validation purposes, these included:

- desktop review of relevant reports, submissions and publications as preliminary research to;
 - establish course need and rationale
 - draft skill and knowledge profile
 - scope course framework
- consultation with VRQA, Centre for U and ETU
- attendance at working group scoping meeting
- PSC meetings.

Project steering committee

PSC members represented the major stakeholders invested in the course and included the following:

- Shane Clayton (Chair) - Technical Officer, Future Energy Skills
- Michael Weeks - Technical Manager, NECA
- Sandy Atkins - Senior Compliance Officer, Renewable Energy, Energy Safe Victoria
- Ross De Rango - Head of Energy and Infrastructure, Electric Vehicle Council
- Verena Pichler - Manager, Policy and Program Design, ZEV Subsidy Program, Solar Victoria
- Bryce Gatton - EV Choice
- Alex Newman - CEO, The Centre for U

In attendance:

	<ul style="list-style-type: none"> • Maryanne Coffey - Project Manager, ETU Vic • Jacinta Bradford - Project Officer, ETU Vic • Teresa Signorello Course Development Manager, TSF Partners • Susan Fechner Course Development Manager, TSF Partners <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.
3.2 Review for re-accreditation	Not applicable.

4. Course outcomes	Standards 5.5, 5.6 and 5.7 AQTF 2021 Standards for Accredited Courses
4.1 Qualification level	This course meets an identified industry need, but does not have the breadth, depth or volume of learning of an AQF qualification.
4.2 Foundation skills	Foundation skills applicable to the outcomes of this course are identified in the units of competency.
4.3 Recognition given to the course (if applicable)	Not applicable.
4.4 Licensing/regulatory requirements (if applicable)	<p>To undertake the 22609VIC Course in Electric Vehicle Charging Infrastructure up to 22kW, the learner is required to:</p> <ul style="list-style-type: none"> • hold an Electrician's Licence (A) registered with Energy Safe Victoria, or • be licensed as per local statutory requirements where the installation is occurring. <p>A licensed electrician must install any electrical equipment that normally operates at a voltage greater than extra low voltage (ELV).</p>
5. Course rules	Standards 5.8 and 5.9 AQTF 2021 Standards for Accredited Courses

5.1 Course structure

To achieve the award of 22609VIC Course in Electric Vehicle Charging Infrastructure up to 22kW the learner must successfully complete two (2) core units of competency listed below.

Where the full course is not completed, a VET Statement of Attainment will be issued for the unit successfully completed.

Unit of competency code	Unit of competency title	Field of Education code (six-digit)	Pre-requisite	Nominal hours
-------------------------	--------------------------	-------------------------------------	---------------	---------------

Core units

VU23286	Design electric vehicle charging infrastructure installation up to 22kW	031399	Nil	8
VU23287	Test and commission electric vehicle charging infrastructure installation up to 22kW	031399	Nil	4
Total nominal hours				12

Standard 5.11 AQTF 2021 Standards for Accredited Courses**5.2 Entry requirements**

To enter the 22609VIC Course in Electric Vehicle Charging Infrastructure up to 22kW, applicants are required to be a holder of an Electrician's licence (A grade) or equivalent as per jurisdictional requirements.

Any person in Victoria who is required to install equipment that is fixed wired into an electrical installation must be licensed to practice in accordance with the requirements of the Victorian Electricity Safety Act 1998.

Learners are best equipped to achieve both course outcomes if they have minimum language, literacy and numeracy skills that are equivalent to Level 3 of the ACSF.

Learners with language, literacy and numeracy skills at a lower level than suggested may require additional support to successfully undertake the course.

6. Assessment**Standard 5.12 AQTF 2021 Standards for Accredited Courses****6.1 Assessment strategy**

All assessment, including Recognition of Prior Learning (RPL), must be compliant with the requirements of:

- Standard 1 of the 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),

	<p>or</p> <ul style="list-style-type: none"> the relevant standards and Guidelines for RTOs at the time of assessment. <p>These standards ensure that the assessment strategies meet the requirement of the course.</p> <p>The nature of the work undertaken is hands on and practical, and subject to electrical licencing requirements. Assessment strategies should therefore reflect this and utilise:</p> <ul style="list-style-type: none"> holistic assessment approaches, where appropriate, to integrate the practical tasks of the two units of competency comprising the course simulated assessment environments only, to support student safety and compliance with occupational health and safety (OHS) / work health and safety (WHS) requirements. <p>Methods of assessment that are consistent with the practical application of skills within a simulated environment are recommended and may include:</p> <ul style="list-style-type: none"> direct observation written and /or oral questioning to assess required knowledge structured assessment activities <ul style="list-style-type: none"> scenario exercises case study activities. <p>Assessment strategies should be consistent with the requirements of each unit of competency and their associated assessment requirements.</p> <p>The assessment conditions for the units of competency specify the conditions under which evidence for assessment must be gathered.</p>
6.2 Assessor competencies	<p>The Course in Electric Vehicle Charging Infrastructure up to 22kW requires assessment to be undertaken by a person or persons in accordance with:</p> <ul style="list-style-type: none"> Standard 1.4 of the 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 RTOs at the time of assessment. <p>Assessors must also be a holder of an Electrician's licence (A grade) or equivalent as per jurisdictional requirements to comply with Standards for Registered Training Organisations (RTOs) 2015, Standard 1.13(a).</p>
7. Delivery	Standards 5.12, 5.13 and 5.14 AQTF 2021 Standards for Accredited Courses

7.1 Delivery modes

Units of competency must be delivered off the job to support learner safety and compliance with occupational health and safety (OHS) / work health and safety (WHS) requirements. The course may therefore be delivered using any combination of the following delivery modes:

- face-to-face, classroom-based delivery
- simulated workplace delivery
- blended learning delivery
- self-paced learning delivery.

Delivery methods should reference realistic workplace situations and provide the opportunity for practical skill development. Problem solving and scenario-based delivery methods are considered appropriate for this course, and may include:

- practical exercises
- case studies
- projects
- presentations.

RTOs must use additional educational support mechanisms to maximise each learner's completion of the course where there may be language, literacy and numeracy gaps and/or the need for any reasonable adjustment that does not compromise the integrity of the course.

Trainers must be a holder of an Electrician's licence (A grade) or equivalent as per jurisdictional requirements, to comply with Standards for Registered Training Organisations (RTO's) 2015, Standard 1.13(a).

7.2 Resources

Facilities, equipment and other resources required to deliver the Course in Electric Vehicle Charging Infrastructure up to 22kW include access to:

- electric vehicle charging infrastructure training facilities and equipment, including:
 - plant/equipment and components comprising electric vehicle charging infrastructure
 - testing and commissioning equipment
- occupational health and safety policy and work procedures/instructions
- access to relevant legislation, design, test and commissioning information, standards and codes of practice
- access to relevant plans, drawings and instructions
- EVC manufacturer specifications/manuals.

Specific resources are identified within each unit of competency within the course.

The Course in Electric Vehicle Charging Infrastructure up to 22kW requires training be undertaken by a person or persons in accordance with:

	<ul style="list-style-type: none"> Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guideline 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 RTOs at the time of assessment. <p>The Course in Electric Vehicle Charging Infrastructure up to 22kW requires trainers to be a holder of an Electrician's licence (A grade) or equivalent as per jurisdictional requirements.</p>
8. Pathways and articulation	Standard 5.10 AQTF 2021 Standards for Accredited Courses
	There are no formal articulation or credit transfer arrangements into other Vocational Education and Training or higher education qualifications for the Course in Electric Vehicle Charging Infrastructure up to 22kW.
9. Ongoing monitoring and evaluation	Standard 5.15 AQTF 2021 Standards for Accredited Courses
	<p>The Director- Portfolio Alignment Branch, Higher Education and Workforce Division, as copyright owner is responsible for the ongoing monitoring and evaluation of the Course in Electric Vehicle Charging Infrastructure up to 22kW.</p> <p>Formal course evaluations will be undertaken halfway through the accreditation period and will be based on student and teacher evaluation surveys and industry stakeholder surveys/consultations.</p> <p>The Victorian Registration and Qualifications Authority (VRQA) will be notified of any significant changes to the course/s resulting from course monitoring and evaluation processes.</p>

Section C – Units of competency

- *VU23286 Design electric vehicle charging infrastructure installation up to 22kW*
 - *VU23287 Test and commission electric vehicle charging infrastructure installation up to 22kW*
-

Unit code	VU23286
Unit title	Design electric vehicle charging infrastructure installation up to 22kW
Application	<p>This unit describes the performance outcomes, skills and knowledge required to design electric vehicle charging infrastructure (EVCI) to support client requirements. It includes the ability to inform client of EVCI assessment, clarify client electric vehicle (EV) and EVCI product options, inspect site and determine the EVCI location, assess electrical installation supply to selected EVCI and prepare an EVCI design solution.</p> <p>The work context relates to residential or small commercial premises, that require the charging of electric vehicles using electric vehicle charging infrastructure for low voltage systems (up to 22kW a.c.). It does not include direct current (d.c). chargers and environments where EVCI is housed at multi-level residential apartment dwellings, shopping centres, or installations along road networks.</p> <p>The unit applies to licensed electrical personnel who work autonomously without supervision in a variety of contexts.</p> <p>Licensing or legislative requirements apply to this unit. Users are required to contact the relevant jurisdiction for current requirements.</p>

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Inform client of EVCI assessment	1.1	Clarify purpose and scope of EVCI assessment with client
		1.2	Confirm roles and responsibilities of client and electrical personnel concerning EVCI assessment
		1.3	Inform client of relevant EV industry standards, electrical regulations, codes and risk minimisation considerations informing EVCI design
		1.4	Inform client of benefits and impacts of EV, relevant EV government programs and sources of information
		1.5	Confirm client understanding of EVCI assessment and design activity approach
2	Clarify client EV and EVCI product options	2.1	Determine client expectations of current and future EV intended usage and associated charging needs
		2.2	Identify and evaluate compatibility of client EV and EV charger intended for use
		2.3	Compare types, capacities and costs of EV chargers relative to compatible EV types, in consultation with client
		2.4	Advise client of EVCI options to achieve usage requirements, where necessary
3	Inspect site and determine EVCI location	3.1	Inspect site for the potential location of EVCI installation and identify any obvious issues of concern

		3.2	Identify Occupational Health and Safety/Work Health and Safety (OHS/WHS) risks and record control measures where required
		3.3	Assess options for placement of EVCI system components with client to maximize EVCI functionality and cost effectiveness, in consultation with client
		3.4	Establish final location of installation site to maximize EVCI functionality and cost effectiveness, in accordance with design requirements
4	Assess electrical installation supply to selected EVCI	4.1	Inform client of electrical safety standard requirements concerning electrical installation
		4.2	Locate site's consumer mains, main switchboard, sub mains, sub boards and other energy resources, e.g. solar/battery, where present and assess capacity in relation to EVCI product and client usage requirements
		4.3	Discuss the capacity of the existing electrical configuration to incorporate the charging requirements of the EVCI, with the client
		4.4	Advise client of options, and associated indicative costs, to either obtain alternative EVCI product or modify existing electrical installation configuration to meet EV charging requirements, based on timing of charging and maximum demand determination options and limitations
5	Prepare EVCI design solution	5.1	Review client EV usage requirements and site assessment variables to formulate a compliant EVCI design solution
		5.2	Record customised EVCI design solution, incorporating EV/EVCI compatibility, EVCI location, approved installation supply capacity, selected maximum demand method and associated benefits and limitations
		5.3	Present final EVCI design solution to client and provide guidance on sources of information for installation options
		5.4	Confirm client understanding of customised EVCI design solution, including benefits and limitations

Range of Conditions

Not applicable

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> interpret EVCI charging requirements, manufacturer's instructions and relevant Australian standards and regulations
Numeracy skills to:	<ul style="list-style-type: none"> calculate maximum demand referencing Australian standards
Oral communication skills to:	<ul style="list-style-type: none"> obtain client feedback and verify understanding of EVCI information respond to client queries regarding EVCI assessment and design solution
Digital literacy skills to:	<ul style="list-style-type: none"> access internet for EV industry information and relevant government schemes
Problem-solving skills to:	<ul style="list-style-type: none"> apply standards to determine electrical installation maximum demand
Initiative and enterprise skills to:	<ul style="list-style-type: none"> source information of current EV and EVCI products, relevant government schemes
Planning and organising skills to:	<ul style="list-style-type: none"> sequence work approach in a logical and efficient manner
Self-management skills to:	<ul style="list-style-type: none"> modify work processes to suit client preferences and site requirements
Digital literacy skills to:	<ul style="list-style-type: none"> access internet for EV industry information, relevant government schemes

Unit Mapping Information

New unit, no equivalent unit

Assessment Requirements

TITLE	Assessment Requirements for VU23286 Design electric vehicle charging infrastructure installation up to 22kW
PERFORMANCE EVIDENCE	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria and foundation skills of this unit including the ability to complete two (2) EVCI design solutions:</p> <ul style="list-style-type: none"> • one (1) must relate to a residential premise • one (1) must relate to a small commercial premise. <p>In so doing the learner must also show evidence that they have conducted a site assessment and developed a customised EVCI design solution based on customer requirements and the performance of a maximum demand determination.</p>
KNOWLEDGE EVIDENCE	<p>The learner must be able to apply essential knowledge required to effectively performing the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • the organisation's customer service principles • verbal and written communication techniques used for client consultation • mathematical measurement and formulas regarding maximum demand determination options and limitations including meta data • types and features of EV and EVCI and related product knowledge • factors effecting EVCI functionality • suppliers of EVCI and related equipment • EVCI manufacturer installation manuals and warranty information • properties of type1 and type 2 connectors • EV rectifier types and sizes • integration of EV with alternative energy resources • retail tariff electrical regulation products and associated costs • EVCI installation considerations and requirements • electrical regulations, standards and codes of practice • relevant government EV incentive schemes • issues related to location of EVCI, including temperature, moisture • Occupational Health and Safety/Work Health and Safety (OHS /WHS) requirements related to EVCI design • OHS/WHS hazards, risks and risk control methods including planning for trenching using 'dial before you dig'.
ASSESSMENT CONDITIONS	<p>Skills in this unit must be demonstrated in an electric vehicle charging installation simulated environment that complies with standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Simulated assessment environments must model the real-life working environment where these skills and knowledge would be performed, with all the relevant equipment and resources of that working environment.</p> <p>Learners must have access to suitable facilities, equipment and resources including:</p>

- plant / equipment and components comprising electric vehicle charging infrastructure
- customised EVCI design solutions.

Assessor requirements

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Assessors must be a holder of an Electrician's licence (A grade) or equivalent as per jurisdictional requirements.

Unit code	VU23287
Unit title	Test and commission electric vehicle charging infrastructure installation up to 22kW
Application	<p>This unit describes the performance outcomes, skills and knowledge required to test and commission electric vehicle charging infrastructure (EVCI) installation up to 22kW. It includes the ability to prepare and test and commission EVCI, and finalise test and commissioning tasks.</p> <p>The work context relates to residential or small commercial premises, that require the charging of electric vehicles using electric vehicle charging infrastructure for low voltage systems (up to 22kW a.c.). It does not include direct current (d.c.) chargers and environments where EVCI is housed at multi-level residential apartment dwellings, shopping centres, or installations along road networks.</p> <p>The unit applies to licensed electrical personnel who work autonomously without supervision in a variety of contexts.</p> <p>Occupational licensing applies to this unit. Users are required to contact the relevant jurisdiction for current requirements.</p>

Element		Performance Criteria	
Elements describe the essential outcomes of a unit of competency.		Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the assessment requirements.	
1	Prepare to test and commission EVCI	1.1	Carry out visual inspection of EVCI installation to facilitate planning to test and commission
		1.2	Determine and follow relevant Occupational Health and Safety/Workplace Health and Safety (OHS/WHS) requirements for the work task
		1.3	Obtain and check testing equipment needed to carry out the task and calibrate where necessary
2	Test and commission EVCI	2.1	Check EVCI location and installation against customised design solution and record any variations
		2.2	Set up equipment and testing devices in accordance with manufacturer's requirements
		2.3	Test EVCI installation using appropriate methods and tools according to manufacturer's specifications
		2.4	Identify and rectify any faults and anomalies found during test procedures
		2.5	Verify, record and document test results in EVCI installation test and commission report
3	Finalise test and commissioning task	3.1	Clean work site in accordance with safety procedures
		3.2	Clean, check and store equipment and testing devices according to manufacturer's recommendations
		3.3	Present relevant documentation to customer and clarify safe use of equipment in accordance with enterprise procedures and compliance requirements

Range of Conditions

Not applicable

Foundation Skills

Foundation skills essential to performance in this unit, but not explicit in the performance criteria are listed here.

Skill	Description
Writing skills to:	<ul style="list-style-type: none"> record and report on testing and commissioning using clear language and industry terminology
Reading skills to:	<ul style="list-style-type: none"> interpret EVCI design solution requirements
Learning skills to:	<ul style="list-style-type: none"> maintain up-to-date knowledge of EVCI testing products and practices
Problem-solving skills to:	<ul style="list-style-type: none"> analyse non conforming test outcomes and implement remedial solutions
Planning and organising skills to:	<ul style="list-style-type: none"> prioritise work tasks in accordance with task deliverables apply appropriate OHS / WHS practices according to workplace procedures
Numeracy skills to:	<ul style="list-style-type: none"> apply mathematical calculations to determine cable sizes and circuit protection
Digital literacy skills to:	<ul style="list-style-type: none"> use digital devices to record and submit documentation to industry standard
Technology skills to:	<ul style="list-style-type: none"> operate EVCI testing equipment and devices correctly
Self-management skills to:	<ul style="list-style-type: none"> complete testing and commissioning tasks within allocated time frames and in accordance industry standards

Unit Mapping Information

New unit, no equivalent unit.

Assessment Requirements	
TITLE	Assessment Requirements for VU23287 Test and commission electric vehicle charging infrastructure installation up to 22kW
PERFORMANCE EVIDENCE	<p>There must be evidence the learner has completed the tasks outlined in the elements and performance criteria of this unit including the ability to test and commission at least one EVCI installation.</p> <p>In so doing the learner must also show evidence that they have provided clarification of the safe use of the equipment to the client.</p>
KNOWLEDGE EVIDENCE	<p>The learner must be able to apply essential knowledge required to effectively perform the task outlined in elements and performance criteria of this unit, manage the task and manage contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> • types of mathematical / electrical unit measurement used in EVCI testing and commissioning • tools and equipment used in testing and commissioning • types, features and methods of use of EVCI testing equipment / devices and related product • factors effecting EVCI functionality • expected behaviour of a typical EV in association with installed EVCI • EVCI manufacturer installation manuals and warranty information • EVCI design and installation considerations and requirements • electrical regulations, standards and codes of practice • Occupational Health and Safety/Work Health and Safety (OHS/WHS) requirements related to EVCI testing • OHS/WHS hazards, risks and risk control methods • enterprise procedures relating to EVCI installation testing, commissioning, reporting and documenting requirements.
ASSESSMENT CONDITIONS	<p>Skills in this unit must be demonstrated in an electric vehicle charging installation simulated environment that complies with standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Simulated assessment environments must model the real-life working environment where these skills and knowledge would be performed, with all the relevant equipment and resources of that working environment.</p> <p>Learners must have access to suitable facilities, equipment and resources including:</p> <ul style="list-style-type: none"> ○ plant / equipment and components comprising electric vehicle charging infrastructure ○ EVCI test and commissioning equipment. <p>Assessor requirements</p> <p>Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.</p> <p>Assessors must be a holder of an Electrician's licence (A grade) or equivalent as per jurisdictional requirements.</p>