

## **22662VIC Course in Fuel Cell Electric Heavy Vehicles**

**Version 1 March 2024**

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

**Accredited for the period: 1/04/24 to 31/03/29**

## Table of contents

<b>Section A – Copyright and course classification information</b> .....	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
<b>Section B – Course information</b> .....	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 .....	7
5.1 Course structure .....	7
5.2 Entry requirements .....	9
6. Assessment.....	9
6.1 Assessment strategy .....	9
6.2 Assessor competencies.....	10
7. Delivery.....	10
7.1 Delivery modes .....	10
7.2 Resources.....	11
8. Pathways and articulation .....	12
9. Ongoing monitoring and evaluation .....	12
<b>Section C – Units of competency</b> .....	13

## Section A – Copyright and course classification information

<p><b>1. Copyright owner of the course</b></p>	<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, Industry and Regions (DJSIR) Victoria.</p> <p>© State of Victoria (DJSIR) 2024</p>
<p><b>2. Address</b></p>	<p><b>Executive Director</b> Deputy CEO Victorian Skills Authority Department of Jobs, Skills, Industry and Regions (DJSIR) GPO Box 4509 Melbourne Vic 3001</p> <p><b>Organisational contact:</b> Manager, Training and Learning Products Unit Engagement Branch Victorian Skills Authority Email: <a href="mailto:course.enquiry@djsir.vic.gov.au">course.enquiry@djsir.vic.gov.au</a></p> <p><b>Day-to-day contact:</b> Curriculum Maintenance Manager (CMM) Engineering industries Box Hill Institute of TAFE Private Bag 2014 Box Hill, Victoria 3128 Email: <a href="mailto:cmmei@boxhill.edu.au">cmmei@boxhill.edu.au</a></p>
<p><b>3. Type of submission</b></p>	<p>This submission is for accreditation of Course in Fuel Cell Electric Heavy Vehicles</p>
<p><b>4. Copyright acknowledgement</b></p>	<p>The following unit of competency:</p> <ul style="list-style-type: none"> <li>• AURETH101 Depower and reinitialise battery electric vehicles</li> </ul> <p>has been imported from the AUR Automotive Retail, Service and Repair Training Package administered by the Commonwealth of Australia. © Commonwealth of Australia.</p>
<p><b>5. Licensing and franchise</b></p>	<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) 2024.</p> <p>This work is licensed under a 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 that on the condition that you credit the State of Victoria (Department of Jobs Skills Industry and Regions) provide a link to the licence indicated if changes were made and comply with all other licence terms. You must not distribute modified material. Request for other use should be addressed to:</p> <p><b>Request for other use should be addressed to:</b></p>

	<p>Deputy CEO          Victorian Skills Authority          Department of Jobs, Skills, Industry and Regions (DJSIR)          GPO Box 4509          Melbourne Vic 3001          Email: <a href="mailto:course.enquiry@djsir.vic.gov.au">course.enquiry@djsir.vic.gov.au</a>          Copies of this publication can be downloaded free of charge from the Victorian Government website</p>
<b>6. Course accrediting body</b>	Victorian Registration and Qualifications Authority
<b>7. AVETMISS information</b>	<p>ANZSCO code:          321211 Motor Mechanic (General)</p> <p>ASCED code:          0305 Automotive Engineering And Technology</p> <p>National course code          To be provided by the VRQA when the course is accredited.</p>
<b>8. Period of accreditation</b>	1 <sup>st</sup> April 2024 to 31 <sup>st</sup> March 2029

## Section B – Course information

<b>1. Nomenclature</b>	<b>Standard 4.1 and 5.8 AQTF 2021 Standards for Accredited Courses</b>
<b>1.1 Name of the qualification</b>	Course in Fuel Cell Electric Heavy Vehicles
<b>1.2 Nominal duration of the course</b>	100 hours
<b>2. Vocational or educational outcomes</b>	<b>Standard 5.1 AQTF 2021 Standards for Accredited Courses</b>
<b>2.1 Outcome(s) of the course</b>	<p>The Course in Fuel Cell Electric Heavy Vehicles aims to provide existing workers with the skills and knowledge required to work safely with fuel cell electric heavy vehicles in the automotive and transport industries.</p> <p>The following skills and knowledge outcomes are included in the course:</p> <ul style="list-style-type: none"> <li>• working safely around fuel cell electric heavy vehicles</li> <li>• operating a fuel cell electric heavy vehicle</li> <li>• refueling fuel cell electric heavy vehicles</li> <li>• responding to fuel cell electric heavy vehicle emergencies</li> <li>• servicing and maintaining fuel cell electric heavy vehicles.</li> </ul>
<b>2.2 Course description</b>	<p>The Course in Fuel Cell Electric Heavy Vehicles is designed to provide graduates with the skills and knowledge required to safely work with fuel cell electric heavy vehicles.</p> <p>The course applies to existing workers who work with fuel cell electric heavy vehicles including but not limited to diesel/heavy vehicle mechanics, automotive electricians, drivers, support staff, yard hands, refuelers, schedulers and first responders.</p>
<b>3. Development of the course</b>	<b>Standards 4.1, 5.1, 5.2, 5.3 and 5.4 AQTF 2021 Standards for Accredited Courses</b>
<b>3.1 Industry, education, legislative, enterprise or community needs</b>	<p>A fuel cell electric heavy vehicle is a type of zero emissions vehicle (ZEV). It uses highly pressurised hydrogen gas to power an electric motor via a fuel cell. While fuel cell electric heavy vehicles are no less safe than diesel fuelled heavy vehicles, they present different safety risks that must be addressed to create a safe working environment.</p> <p>Because this technology is so new in Australia, the current workforce lacks the skills and knowledge required to work safely with fuel cell electric heavy vehicles. This course is designed to address industry's need to upskill existing workers to work safely with fuel cell electric heavy vehicles.</p> <p>The development of this course was funded by the Victorian</p>

Government's Workforce Skill Set Fund as part of the Victorian Government's commitment to reducing greenhouse gas emissions and transitioning to renewable energy sources.

This commitment includes:

- Victoria's Climate Change Act<sup>1</sup>, a long-term net zero greenhouse gas emissions target by 2050
- Victoria Hydrogen Investment Program<sup>2</sup>, supporting the development of a green hydrogen industry through market testing, policy development and a targeted investment program
- Victoria's Zero Emissions Vehicle Roadmap<sup>3</sup> designed to fast-track Victoria's transition to zero emissions vehicles
- Victoria's Zero Emissions Bus Trial<sup>4</sup> focused on buses used for public transport
- Victoria's Skill Plan<sup>5</sup> that states that identifies that Victoria needs new skills and capabilities to meet emission targets
- Victoria's Clean Economy Workforce Skills and Jobs Taskforce<sup>6</sup>, which is supported by a \$10 million investment in the clean economy workforce.

The target group for the course is existing workers in the automotive and transport industries including diesel/heavy vehicle mechanics, automotive electricians, drivers, support staff, yard hands, refuelers, schedulers and first responders. The transport and logistics sector is a significant employer and there are around 9,170 bus and coach drivers; and over 46,400 commercial truck drivers in Victoria. There are also over 21,100 diesel mechanics across the State. This course will be more applicable to drivers and mechanics, however it will also be relevant to large numbers of administrative and non-technical workers in heavy vehicle companies operating heavy fuel cell electric vehicles. First responders have also been identified by the Australian Hydrogen Council as needing training in safely dealing with hydrogen.<sup>7</sup>

<sup>1</sup> Department of Environment, Land, Water and Planning, 'Climate Change Act 2017', accessed 21/04/23 at <https://www.climatechange.vic.gov.au/legislation/climate-change-act-2017>

<sup>2</sup> Engage Victoria, 'The Victorian Hydrogen Investment Program, accessed 21/04/23 at <https://engage.vic.gov.au/vhlp>

<sup>3</sup> Department of Environment, Land, Water and Planning, 'Victoria's Zero Emissions Vehicle Roadmap', accessed 21/04/23 at <https://www.energy.vic.gov.au/renewable-energy/zero-emission-vehicles>

<sup>4</sup> Premier of Victoria, 'Investing in the Buses of the Future, accessed at 21/04/23 at <https://www.premier.vic.gov.au/investing-buses-future>

<sup>5</sup> Victorian Government, 'Victorian Skills Plan for 2022 into 2023', accessed 21/04/23 at <https://content.vic.gov.au/sites/default/files/2022-08/Victorian-Skills-Plan-for-2022-into-2023.pdf>

<sup>6</sup> Gayle Tierney, 'Ministers Statements: Victorian Skills Authority', accessed at 21/04/23 at <https://www.gayletierney.com.au/ministers-statements-victorian-skills-authority/>

<sup>7</sup> <https://h2council.com.au/wp-content/uploads/2023/08/Appendix-A-AHC-notes-on-NHS-v1.pdf>; accessed 12/9/2023

Currently there are 370 fuel cell buses in operation in Europe, but there are plans to get over 1,200 by 2025<sup>8</sup>. The use of fuel cell heavy vehicles by companies in Australia is also set to expand at a similar rate as the availability of hydrogen and fuel cell buses improves.

The Steering Committee met formally on three occasions to discuss the required skills and knowledge outcomes and review and confirm the course design and content. The Steering Committee were consulted and provided feedback via telephone and email communications. Steering Committee members also shared the draft course document with their industry networks for feedback.

Australia's hydrogen industry is in its infancy and therefore technical feedback was also gathered from international subject matter experts including RRC Polytech in Canada, Alameda-Contra Costa Transit District in the USA, and Metroline in the UK.

The Steering Committee included:

- Stephen Lucas (Chair), Warrnambool Bus and Motor Company and Chair of the Bus Industry Confederation's Zero Electric Buses Committee
- Dr John Flett, South West TAFE
- Loren Tuck, Deakin University
- Ross Thompson, Foton Mobility Distribution
- Robert Edwards, H2Networks
- John Storms, Transit Systems
- Julian McCoy, Australian Hydrogen Council and Clean Energy Council

In attendance:

- Michael Ross, National Heavy Vehicle Regulator
- Bill Mundy, Federation University
- Tina Berghella, Accreditation expert and writer
- Ken Hewett, South West TAFE
- Chris Lawlor, South West TAFE
- John Finnerty, South West TAFE

This course:

- does not duplicate, by title or coverage, the outcomes of an endorsed training package qualification

<sup>8</sup> <https://www.sustainable-bus.com/fuel-cell-bus/fuel-cell-bus-hydrogen/>; accessed 12/9/2023

	<ul style="list-style-type: none"> <li>• 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</li> <li>• 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</li> <li>• does not comprise units that duplicate units of competency of a training package qualification.</li> </ul>
<b>3.2 Review for re-accreditation</b>	Not applicable.

<b>4. Course outcomes</b>	<b>Standards 5.5, 5.6 and 5.7 AQTF 2021 Standards for Accredited Courses</b>
<b>4.1 Qualification level</b>	This course meets an identified industry need, but does not have the breadth, depth or volume of learning of a qualification.
<b>4.2 Foundation skills</b>	Foundation skills applicable to the outcomes of this course are identified in the units of competency.
<b>4.3 Recognition given to the course (if applicable)</b>	N/A
<b>4.4 Licensing/regulatory requirements (if applicable)</b>	N/A



5. Course rules	Standards 5.8 and 5.9 AQTF 2021 Standards for Accredited Courses
<p><b>5.1 Course structure</b></p>	<p>To achieve the award of Course in Fuel Cell Electric Heavy Vehicles the learner must successfully complete six units listed in the table below.</p> <p><b>Exit points</b></p> <p>There are five exit points based on the learner’s job role and job role functions.</p> <p>The exit point for support staff, yard hands and schedulers is the successful completion of the following unit of competency:</p> <ul style="list-style-type: none"> <li>• VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles.</li> </ul> <p>The exit point for drivers is the successful completion of the following two units of competency:</p> <ul style="list-style-type: none"> <li>• VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles</li> <li>• VU23652 Undertake fuel cell electric heavy vehicle operations.</li> </ul> <p>The exit point for diesel/heavy vehicle mechanics and automotive electricians is the successful completion of the following three units of competency:</p> <ul style="list-style-type: none"> <li>• AURETH101 Depower and reinitialise battery electric vehicles</li> <li>• VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles</li> <li>• VU23653 Undertake fuel cell electric heavy vehicles maintenance.</li> </ul> <p>The exit point for refuelers is the successful completion of the following two units of competency:</p> <ul style="list-style-type: none"> <li>• VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles</li> <li>• VU23654 Operate and monitor hydrogen refueling operations.</li> </ul> <p>The exit point for first responders is the successful completion of the following two units of competency:</p> <ul style="list-style-type: none"> <li>• VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles</li> <li>• VU23655 Respond to fuel cell electric heavy vehicle emergencies and incidents.</li> </ul> <p>Where the full course is not completed, a VET Statement of Attainment will be issued for each unit successfully completed.</p>

Unit of competency code	Unit of competency title	Field of Education code (six-digit)	Pre-requisite	Nominal hours
<b>Core units</b>				
AURETH101	Depower and reinitialise battery electric vehicles	030505	Nil	10
VU23651	Contribute to working safely in a workplace operating fuel cell electric heavy vehicles	061301	Nil	10
VU23652	Undertake fuel cell electric heavy vehicle operations	030515	VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles	20
VU23653	Undertake fuel cell electric heavy vehicles maintenance	030503	AURETH101 Depower and reinitialise battery electric vehicles VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles	30
VU23654	Operate and monitor hydrogen refueling operations	030717	VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles	10
VU23655	Respond to fuel cell electric heavy vehicle emergencies and incidents	061301	VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles	20

Total nominal hours 100

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

There are no entry requirements for the Course in Fuel Cell Electric Heavy Vehicles.

The course targets existing workers and is best suited to individuals who have at least six months of experience working in a heavy vehicle workplace.

Individuals enrolling in the Course in Fuel Cell Electric Heavy Vehicles are best equipped to successfully undertake the training if they have language, literacy and numeracy that align to Level 2 of the Australian Core Skills Framework (ACSF).

Learners with language, literacy, and numeracy skills at levels lower than suggested above may require additional support to successfully undertake this course.

**6. Assessment****Standard 5.12 and 5.14 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)
- or
- the relevant standards and Guidelines for RTOs at the time of assessment.

Assessment strategies must therefore ensure that:

- 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 is provided for future options
- time allowance to complete a task is reasonable and specified to reflect the context in which the task takes place.

Assessment strategies must be designed to:

- cover a range of skills and knowledge required to demonstrate achievement of the course aims

	<ul style="list-style-type: none"> <li>• collect evidence on a number of occasions to suit a variety of contexts and situations</li> <li>• be appropriate to the knowledge, skills, methods of delivery, and needs and characteristics of learners</li> <li>• assist assessors to consistently interpret evidence</li> <li>• recognise existing skills</li> <li>• be equitable to all learners.</li> </ul> <p>Appropriate assessment methods may include a combination of the following:</p> <ul style="list-style-type: none"> <li>• direct observation of performance of skills</li> <li>• oral and/or written questioning</li> <li>• testimony from a competent person e.g. supervisor</li> <li>• inspection of final process outcomes</li> <li>• documented work-based evidence.</li> </ul> <p>The units of competency may be assessed on-the-job, off-the-job or a combination of both. Where assessment occurs off-the-job, simulation must reflect a realistic workplace setting.</p> <p>Mandated assessment resources apply to the units and are included in the Assessment Conditions to ensure that assessment takes place in a realistic workplace setting.</p> <p>Due to the high risks associated with broken-down, damaged or compromised vehicles and emergencies, assessment involving these must be simulated.</p>
<p><b>6.2 Assessor competencies</b></p>	<p>Assessment must be undertaken by a person or persons in accordance with:</p> <ul style="list-style-type: none"> <li>• Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guidelines 3 of the VRQA Guidelines for VET Providers,</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• the Standards for Registered Training Organisations 2015 (SRTOs),</li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• the relevant standards and Guidelines for RTOs at the time of assessment.</li> </ul> <p>Units of competency imported from training packages must reflect the requirements for assessors specified in that training package.</p>
<p><b>7. Delivery</b></p>	<p><b>Standards 5.12, 5.13 and 5.14 AQTF 2021 Standards for Accredited Courses</b></p>
<p><b>7.1 Delivery modes</b></p>	<p>This course is available for full- or part-time study. Providers should endeavour to be flexible in the way the training is delivered to ensure they meet the needs of learners and their employers.</p>

The course aims to develop competence within an operational workplace context. Practical demonstrations and the opportunity for the application of skills provide the most suitable strategy to reflect the objectives of the course.

On-the-job delivery may include providing opportunities for learners to provide evidence of competence while practising skills and applying knowledge in their workplace when performing tasks between formal training sessions under workplace supervision.

Where delivery occurs off-the-job, conditions must reflect a realistic workplace setting and include realistic workplace scenarios.

Delivery modes may include:

- face to face classroom-based training
- workplace-based learning
- self-paced learning
- blended learning.

Delivery should allow for self-directed learning and development together with independent judgement and accountability for outputs.

## 7.2 Resources

The following resources must be made available:

- workplace procedures that reflect Original Equipment Manufacturer (OEM) instructions and comply with Australian Standards for working safely with fuel cell electric heavy vehicles
- real or simulated workplace setting
- real or simulated refueling station
- real fuel cell electric heavy vehicle
- scenarios of broken-down, damaged or compromised fuel cell electric heavy vehicles and emergency situations.

### Trainer competence

Training must be undertaken by a person or persons in accordance with:

- Standard 1.4 of the AQTF: Essential Conditions and Standards for Initial/Continuing Registration and Guideline 3 of the VRQA Guidelines for VET Providers,

OR

- the Standards for Registered Training Organisations 2015 (SRTOs),

OR

- the relevant standards and Guidelines for RTOs at the time of assessment.

The unit of competency imported from training packages must reflect the requirement for resources/trainers specified in that training package.

<b>8. Pathways and articulation</b>	<b>Standard 5.10 AQTF 2021 Standards for Accredited Courses</b>
	<p>There are no formal articulation arrangements in place at the time of accreditation.</p> <p>Individuals who complete AURETH101 Depower and reinitialise battery electric vehicles from the AUR Automotive Retail, Service and Repair Training Package are eligible for credit into the following qualifications that contain that unit:</p> <ul style="list-style-type: none"> <li>• AUR20920 Certificate II in Automotive Body Repair Technology</li> <li>• AUR30320 Certificate III in Automotive Electrical Technology</li> <li>• AUR30620 Certificate III in Light Vehicle Mechanical Technology</li> <li>• AUR31220 Certificate III in Mobile Plant Technology</li> <li>• AUR32120 Certificate III in Automotive Body Repair Technology</li> <li>• AUR32220 Certificate III in Automotive Glazing Technology</li> <li>• AUR32320 Certificate III in Automotive and Marine Trimming Technology</li> <li>• AUR32420 Certificate III in Automotive Refinishing Technology</li> <li>• AUR32721 Certificate III in Automotive Electric Vehicle Technology</li> <li>• AUR40620 Certificate IV in Automotive Electrical Technology</li> <li>• AUR40720 Certificate IV in Automotive Body Repair Technology.</li> </ul>
<b>9. Ongoing monitoring and evaluation</b>	<b>Standard 5.15 AQTF 2021 Standards for Accredited Courses</b>
	<p>The Curriculum Maintenance Manager - Engineering Industries is responsible for the ongoing monitoring and evaluation of the Course in Fuel Cell Electric Heavy Vehicles.</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 changes to the courses.</p>

## Section C – Units of competency

The list of units of competency imported from training packages includes:

- AURETH101 - Depower and reinitialise battery electric vehicles.

Units of competency developed for the course, which comply with the *AQTF 2021 Standards for Accredited Courses - Unit of Competency Template*:

- VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles
  - VU23652 Undertake fuel cell electric heavy vehicle operations
  - VU23653 Undertake fuel cell electric heavy vehicles maintenance
  - VU23654 Operate and monitor hydrogen refueling operations
  - VU23655 Respond to fuel cell electric heavy vehicle emergencies and incidents.
-

<b>Unit code</b>	VU23651
<b>Unit title</b>	Contribute to working safely in a workplace operating fuel cell electric heavy vehicles
<b>Application</b>	<p>This unit describes the skills and knowledge required to perform non-technical tasks in and around fuel cell electric heavy vehicles and share information with others about technology and transition. It includes identifying hazards and risks, controlling risks and following emergency response procedures.</p> <p>The unit applies to individuals working in workplaces with fuel cell electric heavy vehicles.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
<b>Pre-requisite Unit(s)</b>	Not Applicable.
<b>Competency Field</b>	Not Applicable.
<b>Unit Sector</b>	Not Applicable.

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	Work safely with fuel cell electric heavy vehicles.	1.1	Access and interpret workplace procedures for working safely with fuel cell electric heavy vehicles.
		1.2	Follow workplace procedures for working safely with fuel cell electric heavy vehicles.
		1.3	Select, inspect and fit personal protective equipment (PPE).
		1.4	Identify, report and monitor hazards and risks associated with working with fuel cell electric heavy vehicles.
2	Follow emergency procedures.	2.1	Access and interpret workplace emergency procedures.
		2.2	Respond to emergency warning alarms according to workplace emergency procedures.
		2.3	Evacuate workplace according to workplace emergency procedures.



3	Disseminate fuel cell electric technology information.	3.1	Access and interpret sources of information on fuel cell electric technology and transition.
		3.2	Communicate fuel cell electric technology and transition information.
		3.2	Respond to queries about fuel cell electric heavy vehicle risks and risk controls.

### Range of Conditions

Not Applicable

### Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> <li>interpret safety requirements</li> <li>interpret workplace signs.</li> </ul>
Oral communication	<ul style="list-style-type: none"> <li>use listening and questioning to interact and share information with others.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>interpret and follow emergency evacuation map.</li> </ul>

<b>Unit Mapping Information</b>	New unit, no equivalent unit
---------------------------------	------------------------------

## Assessment Requirements Template

<p><b>Title</b></p> <p><b>Performance Evidence</b></p>	<p>Assessment Requirements for <i>VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles</i></p> <p>Candidates must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• identify and report three fuel cell electric heavy vehicle hazards and risks</li> <li>• participate in two emergency evacuations, including:             <ul style="list-style-type: none"> <li>○ from a fuel cell electric heavy vehicle</li> <li>○ from a building</li> </ul> </li> <li>• participate in a verbal interaction that requires a response to a concern about fuel cell electric safety</li> <li>• participate in a verbal interaction that includes sharing current information about fuel cell electric technology and transition.</li> </ul>
<p><b>Knowledge Evidence</b></p>	<p>Candidates must be able to demonstrate essential knowledge required to effectively perform the tasks outlined in elements and performance criteria of this unit, and to manage the tasks and contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> <li>• workplace procedures for working safely with fuel cell electric heavy vehicles:             <ul style="list-style-type: none"> <li>○ required PPE and how to inspect and fit</li> <li>○ identifying and reporting hazards and risks</li> <li>○ what to do in an emergency</li> </ul> </li> <li>• basic fuel cell technology:             <ul style="list-style-type: none"> <li>○ hydrogen as fuel</li> <li>○ characteristics and behaviour of hydrogen</li> <li>○ how fuel cells work</li> <li>○ safety systems</li> </ul> </li> <li>• high pressure hydrogen gas, including properties, hazards and risks</li> <li>• combustible atmospheres</li> <li>• material compatibility</li> <li>• environmental and operational benefits of fuel cell electric technology and transition</li> <li>• hazards, risks and risk controls associated with stationary and moving fuel cell electric heavy vehicles</li> </ul>

- roles of non technical staff in battery care, prevention of battery fire and reporting of hazards, risks and risk controls in fuel cell electric heavy vehicles
- hazards, risks and risk controls associated with broken down, damaged or compromised fuel cell electric heavy vehicles, including:
  - electrical hazards
  - fire
  - combustible atmospheres
  - venting and leaking gas and liquids
  - high pressures
  - sources of ignition
  - extreme hot and cold temperatures
  - emergency response protocols
- sources of information about fuel cell electric technology and transition.

### Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects a real workplace setting.

Assessment must include direct observation of tasks under workplace or simulated workplace conditions.

Assessment involving broken-down, damaged or compromised fuel cell electric heavy vehicles must be simulated.

Assessors must verify performance evidence through questioning skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- plain English workplace procedures for non technical staff that reflect OEM instructions and comply with Australian Standards for working safely with fuel cell electric heavy vehicles
- plain English workplace emergency procedure and evacuation map
- real or simulated emergency evacuation alarm
- real or simulated fuel cell electric heavy vehicle workplace
- real or simulated fuel cell electric heavy vehicle charging station
- PPE and equipment for inspecting and charging fuel cell electric heavy vehicles.

No specialist vocational competency requirements for assessors apply to this unit.

<b>Unit code</b>	VU23652
<b>Unit title</b>	Undertake fuel cell electric heavy vehicle operations
<b>Application</b>	<p>This unit describes the skills and knowledge required to operate and drive fuel cell electric heavy vehicles. It includes identifying hazards and risks, controlling risks, performing pre- and post-operational checks, operating and controlling the risks associated with broken-down, damaged or compromised vehicles.</p> <p>Driving must be carried out in accordance with relevant state/territory roads and traffic authority licence requirements and regulations for heavy vehicles.</p> <p>The unit applies to individuals who are licenced to drive heavy vehicles and work with fuel cell electric heavy vehicles.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
<b>Pre-requisite Unit(s)</b>	VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles
<b>Competency Field</b>	Not Applicable.
<b>Unit Sector</b>	Not Applicable.

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 fuel cell electric heavy vehicle for operation.	1.1	Access and follow workplace procedures for preparing fuel cell electric heavy vehicles for operation and performing pre- and post operational checks.
		1.2	Identify and report hazards and risks associated with electrically charged systems and compressed hydrogen gas systems in fuel cell electric heavy vehicles according to workplace procedures.
		1.3	Implement risk controls for stationary fuel cell electric heavy vehicles, moving fuel cell electric heavy vehicles, and broken-down, damaged or compromised fuel cell electric heavy vehicles.
		1.4	Select, inspect and fit personal protective equipment (PPE).

		1.5	Conduct pre-operational checks of fuel cell electric heavy vehicles according to workplace procedures.
		1.6	Report identified problems, faults and malfunctions in fuel cell electric heavy vehicles according to workplace procedures.
2	Operate fuel cell electric heavy vehicle.	2.1	Start-up and shut down fuel cell electric heavy vehicle according to the Original Equipment Manufacturer (OEM) instructions.
		2.2	Operate braking and steering systems according to OEM instructions and workplace procedures.
		2.3	Read, interpret and monitor fuel cell system meters and indicators according to OEM instructions.
		2.4	Respond to fuel cell system warnings and alarms.
3	Complete operation.	3.1	Conduct post-operational checks of fuel cell electric heavy vehicles according to workplace procedures.
		3.2	Record post-operational checks according to workplace procedures.
		3.3	Report damaged and malfunctioning equipment according to workplace procedures.

### Range of Conditions

Not Applicable

### Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> <li>interpret workplace procedures</li> <li>interpret OEM instructions</li> <li>interpret safety requirements</li> <li>interpret basic information about job requirements</li> <li>interpret checklists</li> <li>interpret with workplace signs.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>record information on checklists</li> </ul>

	<ul style="list-style-type: none"><li>complete simple workplace reports, including hazard and risk reports and incident reports.</li></ul>
Digital literacy skills to:	<ul style="list-style-type: none"><li>interpret digital readouts as part of vehicle checks.</li></ul>

<b>Unit Mapping Information</b>	New unit, no equivalent unit
---------------------------------	------------------------------

## Assessment Requirements Template

### Title

Assessment Requirements for *VU23652 Undertake fuel cell electric heavy vehicle operations*

### Performance Evidence

Candidates must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- identify and report fuel cell electric heavy vehicle operational hazards and risks, and must include:
  - an electrical hazard
  - a venting or leaking gas or liquid
  - a fire
  - a high pressure
  - a source of ignition
  - a high temperature of a full cell or electric motor
  - an emergency response protocol
- identify and report fuel cell electric heavy vehicle specific hazards and risks associated with working with a broken-down, damaged or compromised fuel cell electric heavy vehicle, and must include:
  - an electrical hazard
  - a fire
  - a combustible atmosphere
  - a venting or leaking gas or liquid
  - a high pressure
  - a source of ignition
  - an extreme hot or cold temperature
  - an emergency response protocol
- perform and record a pre-operational check of a fuel cell electric heavy vehicle
- perform and record a post-operational check of a fuel cell electric heavy vehicle
- operate and monitor a fuel cell electric heavy vehicle, including at highway speeds.

### Knowledge Evidence

Candidates must be able to demonstrate essential knowledge required to effectively perform the tasks outlined in elements and performance criteria of this unit, and to manage the tasks and contingencies in the context of the work role. This includes knowledge of:

- workplace procedures for safe operation of fuel cell electric heavy vehicles:
  - required PPE and how to inspect and fit
  - working safely with electrical system
  - working safely with hydrogen system
  - preparing fuel cell electric heavy vehicles for operation
  - working with moving fuel cell electric heavy vehicles
  - operating 'instant' torque electric motors
  - accelerating and braking safely
  - driving with no engine noise
  - procedures for dealing with broken-down, damaged or compromised fuel cell electric heavy vehicles
  - identifying and reporting hazards and risks
  - isolation including 'test and tag' and quarantine for broken down, damaged or compromised fuel cell electric heavy vehicles
- hazards, risks and risk controls associated with stationary and moving fuel cell electric heavy vehicles including:
  - in the yard
  - in an enclosed workshop
  - on the road with passengers on board
  - electrical hazards
  - leaks
  - fire
  - high pressures
  - high temperature of full cell or electric motor
  - sources of ignition
  - emergency response protocols
- fuel cell electric heavy vehicle onboard systems in case of an incident
- location of safety equipment on fuel cell electric heavy vehicles
- markings, name plates and labels
- components and feedback systems of fuel cell electric heavy vehicles that contribute to:
  - hazards and risks to staff
  - maintaining safety of staff
- pre- and post-operational checks of fuel cell electric heavy vehicles:



- power and propulsion systems
- rechargeable energy storage systems (RESS)
- air conditioning systems for cooling RESS
- high voltage energy storage systems
- low voltage systems
- warning systems
- overall condition of cabling and components
- visual check of system components
- visual check for damage
- operation and state of gauges, meters and warning systems
- operation of fuel cell electric heavy vehicles:
  - start-up
  - shut down
  - steering
  - braking
  - monitoring
  - energy-efficient driving techniques to manage the vehicle's range
- colour-coding of high voltage and low voltage systems and cabling in fuel cell electric heavy vehicles
- locations of high voltage currents on fuel cell electric heavy vehicles that put staff at risk
- hazards, risks and risk controls associated with working with hydrogen
- hazards, risks and risk controls associated with working with batteries and high voltage systems in fuel cell electric heavy vehicles, including dangers of serious or fatal injury
- dangers arising from direct contact with high voltage current circuits, including shocks and arc flash from stored or generated electrical energy
  - contact with high voltage current in a flooded vehicle
  - fire in the rechargeable energy storage (battery) systems
  - contact with battery electrolyte and electrolyte vapours
  - exposure to powerful magnets contained in electric vehicle components
- roles of non technical staff in battery care, prevention of battery fire and reporting of hazards, risks and risk controls in fuel cell electric heavy vehicles

- using feedback from fuel cell electric heavy vehicle system meters and indicators
- protecting rechargeable energy storage systems (RESS) from overheating from direct sun during charging
- hazards, risks and risk controls associated with broken down, damaged or compromised fuel cell electric heavy vehicles, including:
  - electrical hazards
  - fire
  - combustible atmospheres
  - venting and leaking gas and liquids
  - high pressures
  - sources of ignition
  - extreme hot and cold temperatures
  - emergency response protocols.

### Assessment Conditions

Competency is to be assessed in the workplace or a simulated environment that accurately reflects a real workplace setting.

Assessment must include direct observation of tasks under workplace or simulated workplace conditions.

Assessment involving broken-down, damaged or compromised fuel cell electric heavy vehicles must be simulated.

Assessors must verify performance evidence through questioning skills and knowledge to ensure correct interpretation and application.

The following resources must be made available:

- plain English workplace procedures for non technical staff that reflect OEM instructions and comply with Australian Standards for working safely with fuel cell electric heavy vehicles
- OEM instructions for operating fuel cell electric heavy vehicles
- real or simulated fuel cell electric heavy vehicle workplace
- real or simulated fuel cell electric heavy vehicle charging station
- real fuel cell electric heavy vehicle
- pre- and post-operational checklists
- PPE and equipment for operating fuel cell electric heavy vehicles
- scenarios of broken-down, damaged or compromised fuel cell electric heavy vehicles.

No specialist vocational competency requirements for assessors apply to this unit.

<b>Unit code</b>	VU23653
<b>Unit title</b>	Undertake fuel cell electric heavy vehicle maintenance
<b>Application</b>	<p>This unit describes the skills and knowledge required to service and maintain fuel cell electric heavy vehicles. It includes identifying hazards and risks, assessing and controlling risks, inspection, and identifying and replacing faulty components.</p> <p>The unit applies to heavy vehicle technicians undertaking technical work with fuel cell electric heavy vehicles.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
<b>Pre-requisite Unit(s)</b>	<p>AURETH101 Depower and reinitialise battery electric vehicles</p> <p>VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles</p>
<b>Competency Field</b>	Not Applicable.
<b>Unit Sector</b>	Not Applicable.

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 service and maintain fuel cell electric heavy vehicle.	1.1	Access and interpret fuel cell electric heavy vehicle maintenance and servicing job requirements.
		1.2	Access and interpret workplace procedures and the Original Equipment Manufacturer (OEM) instructions for servicing and maintaining fuel cell electric heavy vehicles.
		1.3	Identify hazards and risks, assess risks and apply risk controls according to workplace procedures.
		1.4	Select tools and personal protective equipment (PPE), confirm in safe working order and fit personal protective equipment.
2	Inspect fuel cell electric heavy vehicle for faults and risks.	2.1	Access and interpret telemetry and vehicle data according to the OEM instructions.

		2.2	Test fuel cell electric heavy vehicle and components according to the OEM instructions, codes and standards.
		2.3	Analyse telemetry and vehicle data and test results to identify faults and risks.
		2.4	Recommend and report servicing and maintenance activities according to workplace procedures.
3	Service and maintain fuel cell electric heavy vehicle.	3.1	Depower fuel cell electric heavy vehicle according to OEM instructions and workplace procedures.
		3.2	Perform servicing and maintenance activities and remove and replace faulty components according to OEM instructions and workplace procedures.
		3.3	Repower fuel cell electric heavy vehicle according to OEM instructions and workplace procedures.
		3.4	Check and confirm fuel cell electric heavy vehicle systems according to OEM instructions and workplace procedures.
		3.5	Report and address post servicing and maintenance faults according to OEM instructions and workplace procedures.
4	Complete work.	4.1	Perform final inspection to confirm fuel cell electric heavy vehicle is in safe working order.
		4.2	Clear work area according to workplace procedures.
		4.3	Clean, check and store tools and equipment according to workplace procedures.
		4.4	Complete service and maintenance records according to workplace procedures.

### Range of Conditions

Not Applicable

### Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> <li>interpret and follow OEM instructions</li> </ul>

	<ul style="list-style-type: none"> <li>interpret safety requirements.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>read and use symbols and diagrams</li> <li>interpret and match component part numbers</li> <li>read, analyse and record telemetry data including measurements, ratios and rates.</li> </ul>
Digital literacy skills to:	<ul style="list-style-type: none"> <li>access workplace procedures and OEM instructions</li> <li>use fuel cell electric heavy vehicle system meters and indicators</li> <li>use specialised fuel cell electric heavy vehicle diagnostic equipment.</li> </ul>

<b>Unit Mapping Information</b>	New unit, no equivalent unit
---------------------------------	------------------------------

## Assessment Requirements Template

<b>Title</b>	Assessment Requirements for <i>VU23653 Undertake fuel cell electric heavy vehicle maintenance</i>
<b>Performance Evidence</b>	<p>Candidates must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• safely service and maintain a fuel cell electric heavy vehicle, and must include:             <ul style="list-style-type: none"> <li>○ depowering and repowering</li> <li>○ identifying and replacing a faulty electrical component</li> <li>○ identifying a leaky gas component.</li> </ul> </li> </ul>
<b>Knowledge Evidence</b>	<p>Candidates must be able to demonstrate essential knowledge required to effectively perform the tasks outlined in elements and performance criteria of this unit, and to manage the tasks and contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> <li>• workplace procedures for safe servicing and maintenance of fuel cell electric heavy vehicles</li> <li>• scope and limitations of the job role and the responsibilities of OEM</li> <li>• hazards, risks and risk controls associated with:             <ul style="list-style-type: none"> <li>○ servicing and maintenance of fuel cell electric heavy vehicles</li> <li>○ working with hydrogen</li> </ul> </li> <li>• how a fuel cell works and how a fuel cell electric heavy vehicle works</li> <li>• types, functions and configurations of fuel cell components</li> <li>• purpose and process of purging hydrogen systems</li> <li>• depowering and repowering processes</li> <li>• using feedback from fuel cell electric heavy vehicle system meters and indicators</li> <li>• electrical and hydrogen component functions, hazards and risks</li> <li>• hydrogen-based standards and legislative requirements</li> <li>• requirements for safe monitoring and responses to hydrogen levels</li> <li>• selection, fit and use of PPE.</li> </ul>
<b>Assessment Conditions</b>	<p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects a real workplace setting.</p> <p>Assessors must verify performance evidence through questioning skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p>

- workplace procedures for servicing and maintaining fuel cell electric heavy vehicles
- OEM instructions for servicing and maintaining fuel cell electric heavy vehicles
- real or simulated fuel cell electric heavy vehicle workplace
- real or simulated fuel cell electric heavy vehicle
- real or simulated electrical and hydrogen faults
- tools, equipment and PPE for servicing and maintaining fuel cell electric heavy vehicles.

No specialist vocational competency requirements for assessors apply to this unit.

<b>Unit code</b>	VU23654
<b>Unit title</b>	Operate and monitor hydrogen refueling operations
<b>Application</b>	<p>This unit describes the skills and knowledge required to refuel fuel cell electric heavy vehicles. It includes identifying hazards and risks, controlling risks, receiving hydrogen fuel deliveries and storage, refueling, and responding to refueling incidents and emergencies.</p> <p>The unit applies to workers undertaking refueling work with fuel cell electric heavy vehicles.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
<b>Pre-requisite Unit(s)</b>	VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles
<b>Competency Field</b>	Not Applicable.
<b>Unit Sector</b>	Not Applicable.

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	Work safely around fuel delivery and refueling operations.	1.1	Access and interpret workplace procedures for operating hydrogen storage facilities and refueling fuel cell electric heavy vehicles.
		1.2	Identify hazards and risks, assess risks and apply risk controls according to workplace procedures.
		1.3	Select and fit personal protective equipment (PPE) according to workplace procedures.
2	Receive hydrogen fuel deliveries.	2.1	Follow workplace procedures for hydrogen fuel deliveries and pre-start checks.
		2.2	Inspect and confirm fuel delivery and transfer equipment is in safe working order.
		2.3	Operate and monitor fuel delivery equipment according to workplace procedures.
		2.4	Complete fuel delivery records and pre- and post-delivery checklists according to workplace procedures.



3	Refuel fuel cell electric heavy vehicles.	3.1	Follow workplace procedures for refueling fuel cell electric heavy vehicles.
		3.2	Inspect and confirm hydrogen storage and refueling equipment is in safe working order.
		3.3	Confirm fuel cell electric heavy vehicle is parked in the designated refueling area and ready for refueling.
		3.4	Refuel fuel cell electric heavy vehicle according to Original Equipment Manufacturer (OEM) instructions and workplace procedures.
		3.5	Operate and monitor refueling equipment according to workplace procedures.
		3.6	Complete refueling records according to workplace procedures.

### Range of Conditions

Not Applicable

### Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> <li>interpret OEM instructions</li> <li>interpret safety requirements.</li> </ul>
Writing skills to:	<ul style="list-style-type: none"> <li>complete pre- and post-delivery checklists.</li> </ul>
Numeracy skills to:	<ul style="list-style-type: none"> <li>read and use symbols and diagrams</li> <li>read, analyse and record data including measurements, ratios and rates.</li> </ul>
Digital literacy skills to:	<ul style="list-style-type: none"> <li>access workplace procedures and OEM instructions</li> <li>use fuel delivery and refueling operations meters and indicators.</li> </ul>

### Unit Mapping Information

New unit, no equivalent unit

## Assessment Requirements Template

<b>Title</b>	Assessment Requirements for <i>VU23654 Operate and monitor hydrogen refueling operations</i>
<b>Performance Evidence</b>	<p>Candidates must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• receive and record one hydrogen fuel delivery</li> <li>• refuel a fuel cell electric heavy vehicle.</li> </ul>
<b>Knowledge Evidence</b>	<p>Candidates must be able to demonstrate essential knowledge required to effectively perform the tasks outlined in elements and performance criteria of this unit, and to manage the tasks and contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> <li>• workplace procedures for safe fuel delivery and safe refueling of fuel cell electric heavy vehicles</li> <li>• hazards, risks and risk controls associated with fuel delivery and refueling of fuel cell electric heavy vehicles</li> <li>• depowering processes that apply to refueling</li> <li>• using feedback from fuel delivery and refueling operations meters and indicators</li> <li>• hydrogen-based standards and legislative requirements</li> <li>• safe hydrogen storage practices</li> <li>• safe hydrogen refueling practices</li> <li>• battery charging processes</li> <li>• requirements for safe monitoring of hydrogen fuel deliveries and refueling of fuel cell electric heavy vehicles.</li> </ul>
<b>Assessment Conditions</b>	<p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects a real workplace setting.</p> <p>Assessors must verify performance evidence through questioning skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p> <ul style="list-style-type: none"> <li>• workplace procedures for fuel delivery and refueling of fuel cell electric heavy vehicles</li> <li>• OEM instructions for refueling of fuel cell electric heavy vehicles</li> <li>• real or simulated fuel cell electric heavy vehicle workplace</li> <li>• real or simulated fuel cell electric heavy vehicle</li> <li>• tools, equipment and PPE for fuel delivery and refueling of fuel cell electric heavy vehicles.</li> </ul>

No specialist vocational competency requirements for assessors apply to this unit.

<b>Unit code</b>	VU23655
<b>Unit title</b>	Respond to fuel cell electric heavy vehicle emergencies and incidents
<b>Application</b>	<p>This unit describes the skills and knowledge required to respond to emergencies and incidents involving a fuel cell electric heavy vehicle. It includes identifying hazards and risks, assessing and controlling risks, and depowering electrical systems and isolating hydrogen systems.</p> <p>The unit applies to first responders who work with or may encounter fuel cell electric heavy vehicles in an emergency situation prior to the arrival of formal emergency services. First responders are not expected to undertake complex mechanical or electrical tasks.</p> <p>No occupational licensing, legislative or certification requirements apply to this unit at the time of publication.</p>
<b>Pre-requisite Unit(s)</b>	VU23651 Contribute to working safely in a workplace operating fuel cell electric heavy vehicles
<b>Competency Field</b>	Not Applicable.
<b>Unit Sector</b>	Not Applicable.

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 control fuel cell electric heavy vehicle risks.	1.1	Access and interpret workplace procedures and Original Equipment Manufacturer (OEM) instructions for controlling fuel cell electric heavy vehicle risks in an emergency.
		1.2	Inspect emergency or incident site and fuel cell electric heavy vehicle to identify hazards and risks, assess risks and apply risk controls according to workplace procedures.
		1.3	Assess and determine an emergency safety perimeter.
2	Control fuel cell electric heavy vehicle risks.	2.1	Communicate and cooperate with emergency services personnel.
		2.2	Select and fit personal protective equipment (PPE) according to workplace procedures.
		2.3	Establish a safety perimeter using available equipment.

		2.4	Assist incident casualties to safety.
		2.5	Depower electrical systems according to OEM instructions.
		2.6	Isolate hydrogen systems according to OEM instructions.
3	Complete emergency and incident reports.	3.1	Access and interpret workplace procedures and forms for reporting fuel cell electric heavy vehicle emergencies and incidents.
		3.2	Report fuel cell electric heavy vehicle emergencies and incidents according to workplace procedures.

### Range of Conditions

Not Applicable

### Foundation Skills

Foundation Skills describe the language, literacy, numeracy and employability skills that are essential to performance.

Skill	Description
Reading skills to:	<ul style="list-style-type: none"> <li>interpret OEM instructions</li> <li>interpret safety requirements.</li> </ul>
Oral communication skills:	<ul style="list-style-type: none"> <li>interpret instructions from emergency services personnel</li> <li>share information about hazards, risks and risk controls</li> <li>provide reassurance to casualties.</li> </ul>
Problem solving:	<ul style="list-style-type: none"> <li>assess risks and take action when safe to do so.</li> </ul>
Digital literacy skills to:	<ul style="list-style-type: none"> <li>access workplace procedures and OEM instructions.</li> </ul>

<b>Unit Mapping Information</b>	New unit, no equivalent unit
---------------------------------	------------------------------

## Assessment Requirements Template

<b>Title</b>	Assessment Requirements for <i>VU23655 Respond to fuel cell electric heavy vehicle emergencies and incidents</i>
<b>Performance Evidence</b>	<p>Candidates must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:</p> <ul style="list-style-type: none"> <li>• respond to fuel cell electric heavy vehicle risks in an emergency in two separate emergency situations that must include: <ul style="list-style-type: none"> <li>○ one emergency in an enclosed space</li> <li>○ one emergency in an open space.</li> </ul> </li> </ul>
<b>Knowledge Evidence</b>	<p>Candidates must be able to demonstrate essential knowledge required to effectively perform the tasks outlined in elements and performance criteria of this unit, and to manage the tasks and contingencies in the context of the work role. This includes knowledge of:</p> <ul style="list-style-type: none"> <li>• workplace procedures for controlling fuel cell electric heavy vehicle risks in an emergency</li> <li>• methods for making the area safe for responders, casualties and bystanders</li> <li>• responsibilities and limitations of own job role in an emergency situation</li> <li>• hazards, risks and risk controls associated with fuel cell electric heavy vehicles in an emergency including: <ul style="list-style-type: none"> <li>○ on the road</li> <li>○ in the depot</li> <li>○ in an enclosed workshop</li> <li>○ on a bridge</li> <li>○ in a tunnel</li> </ul> </li> <li>• depowering process</li> <li>• isolating hydrogen system process.</li> </ul>
<b>Assessment Conditions</b>	<p>Competency is to be assessed in the workplace or a simulated environment that accurately reflects a real workplace setting.</p> <p>Assessors must verify performance evidence through questioning skills and knowledge to ensure correct interpretation and application.</p> <p>The following resources must be made available:</p> <ul style="list-style-type: none"> <li>• workplace procedures for controlling fuel cell electric heavy vehicle risks in an emergency</li> <li>• OEM instructions for fuel cell electric heavy vehicle emergency response</li> </ul>

- real or simulated fuel cell electric heavy vehicle workplace
- real or simulated fuel cell electric heavy vehicle
- simulated emergency
- PPE for controlling fuel cell electric heavy vehicle risks in an emergency.

No specialist vocational competency requirements for assessors apply to this unit.