Australian Industry and Skills Committee

HYDROGEN-PLUMBING/GAS

Case for Change

Name of allocated IRC(s): Construction, Plumbing and Services
Name of the SSO: Artibus Innovation

1. Administrative information

*For a list of the products proposed to be reviewed as part of this project, please see **Attachment A**.*

Name of IRC(s):	Construction, Plumbing and Service IRC
Name of SSO:	Artibus Innovation

1.1 Name and code of Training Package(s) examined to determine change is required

CPC Construction, Plumbing and Services Training Package.

2. The Case for Change

*For information on the job roles to be supported through the proposed qualifications updates, enrolments data, completion rates, and the number of RTOs delivering these qualifications please see **Attachment B**.*

2.1 Rationale for change

This Case for Change (CfC) is aimed at addressing emerging market demands relating to hydrogen for the plumbing industry. Renewable hydrogen will be a key resource in Australia's energy future. The National Hydrogen Strategy, published in November 2019, outlines a national commitment and process for its uptake.

Hydrogen is a low or no emissions alternative to natural gas that can assist in assuring the security of liquid fuels, provide energy grid support, and address the persistently high costs of natural gas for domestic use.

Plumbers and gasfitters will:

- see incremental changes to the domestic gas supply that will require new technical skills for domestic plumbers to continue their current work
- likely work on fuel cells and with hydrogen burning appliances, which will require the skills and competencies to balance the risk levels associated with hydrogen plumbing. It is also important to note that hydrogen is intrinsically linked with electricity in the use of electrolysers or fuel cells, which will lead to combined training for gas fitters/plumbers and electricians
- hydrogen also has significantly different combustion and ignition characteristic to other gases. Hydrogen requires less energy for ignition and it has the widest air-to-gas ratio for ignition. Commissioning and decommissioning hydrogen systems will require a different understanding of purging techniques than what is currently taught
- the implications of failing to prepare training and the workforce for hydrogen – across industrial, commercial and residential settings – for the generation of electricity, power, and heat, will result in a national skills shortage.

This project aims to add capacity to the plumbing industry for the expected increase and use of hydrogen.

2.2 Evidence for change

At present, there are no formerly qualified technicians that install or service hydrogen equipment from networks and gas meters. Installation of residential and commercial hydrogen in battery form has already commenced in Australia. Having capable plumbing and gas fitting technicians that can support this activity is critical.

The COAG Energy Council released the National Strategy in November 2019. It outlines the direction forward for Australia to develop a significant hydrogen market for both domestic and export purposes. The strategy focuses on the development and implementation of green hydrogen for both domestic and export use.

The National Hydrogen Strategy, and subsequent government statements such as the Technology Investment Roadmap, have persistently reinforced the centrality of renewable hydrogen to Australia's energy security, domestic consumption, and export markets.

Hydrogen is expected to be used domestically and commercially in three main ways:

1) combined heat and power fuel cells
2) hydrogen burning appliances that have been developed and are currently undergoing testing
3) hot water and ventilation systems (combined electrolyser, fuel cell, hydrogen storage, and heat recovery).

The development of hydrogen competencies, including those in existing qualifications and apprenticeships, will support the development and upskilling of the current plumbing labour force. There is currently no training available to support plumbing and gas technicians to meet market demand.

2.3 Consideration of existing products

- At present, there are three accredited courses that support hydrogen activity: *VBQU508 - Follow safe work practices for handling hydrogen fuel cells*; *VBQU509 - Set up and operate hydrogen fuel cells;* and *VBQU510 Carry out fault finding and maintenance on fuel cells*.
- The Type A and B units of competency native to the CPC Construction, Plumbing and Services Training Packages, were assessed to see whether they will support hydrogen. The Working Group determined that including hydrogen to existing Type A and B competencies would not be fit for purpose.
- The Working Group has advised that plumbing or gas fitters working with hydrogen downstream of the gas meter requires new skills and knowledge (e.g., understanding pressure levels, manufacture products, joining techniques, and/or threaded joints).

  The competencies in the UEG Training Package support hydrogen activity 'upstream of the gas meter', which includes the distribution, transmission, storage and production. The key difference between what is being proposed in this *Case for Change: Hydrogen – Plumbing/Gas* is that these units focus on activity 'downstream of the gas meter'. There is both a skills and industrial demarcation between what type of activity is undertaken up or downstream of the gas metre as it relates to hydrogen.

2.4 Approach to streamlining and rationalisation of the training products being reviewed

- In the first instance, the Working Group considered updating existing Type A or B units of competency native to the CPC Construction, Plumbing and Services Training Package to avoid the creation of new units. However, it was identified that working with hydrogen-based appliances (e.g., Type A, B or potentially C) will require plumbers and gas fitters to be knowledgeable of the different forms of hydrogen (e.g., liquid, compressed gaseous, solid).

3. Stakeholder consultation

3.1 Stakeholder consultation undertaken in the development of Case for Change

*For a full list of industry-specific stakeholders that actively participated in the stakeholder consultation process undertaken to develop the Case for Change, please see **Attachment C**.*

- Industry consultation strategies included:
  - establishing a Working Group
  - targeted consultation with key stakeholders (e.g., Head of the National Strategy, regulators, SSOs, and employers)
  - teleconferences
  - direct engagement with STAs (email, presentations/forums)
  - running a national webinar
  - notification of training providers (via email)
  - promotion through social media channels.
- An online survey and the opportunity to provide a submission was also made available to stakeholders from regional, remote, and rural areas. A webinar was held on 10 June 2021, which presented another opportunity for stakeholders to comment on the proposal. Feedback received mainly focused on the Case for Change process and timelines.
- The CPC IRC were briefed on the progress of the project and encouraged to support stakeholder engagement through their industry channels.

3.2 Evidence of Industry Support

*For a list of the issues raised by stakeholders during consultation and the IRC's response to these, please see **Attachment D.***

- The following stakeholder participation list identifies ranks stakeholders in order of those most closely engaged:
  1. training providers
  2. regulators
  3. associations
  4. peak bodies/councils
  5. unions
  6. business
  7. government.
- Feedback received on the project and proposed unit framework developed was addressed by the Working Group and was also used to inform the Case for Change.
- Letters of support have been provided and are enclosed in Attachment G. Survey responses demonstrate support for the proposed unit framework. Commentary and feedback on a proposed units was utilised to inform the proposed unit development.

3.3 Proposed stakeholder consultation strategy for project

*Note: For a full list of industry-specific stakeholders who are planned to be contacted to participate in the stakeholder consultation process undertaken for this project, please see **Attachment E**.*

- A project webpage has been created to support the visibility of the project and stakeholder input.
- Directed/targeted engagement with STAs, regulators, energy businesses, training providers, union.
- Online mechanisms will be used to support remote, rural and regional engagement.
- A webinar is being held to further support engagement across remote, rural and regional engagement.
- The option to put forward industry submissions will made available throughout the duration of the project.
- Social media channels will be used to inform stakeholders of the project.

4. Licencing or regulatory linkages

- Occupational licencing regulators and trainers currently lack sufficient skills and knowledge to licence or teach about working with hydrogen. The development of units of competency will inform and support regulators and consolidate licencing regimes appropriate within their jurisdictions.
- Hydrogen work, downstream of the gas meter and off networks, is not currently regulated through an occupational licencing regime in most jurisdictions. Regulators and trainers currently lack sufficient skills and knowledge to licence or teach hydrogen work.
- Unit development by the GAS IRC and the proposed competencies will inform and support regulators.

5. Project implementation

5.1 Prioritisation category

- It is proposed that this product development progress as a complex project, given the complexities and time considerations arising when developing new units of competency for an emerging industry. Factors such as sustainability, workplace and community safety, regulation regimes, will all need to be considered across each unit of competency.

5.2 Project milestones

- Key project milestones include:
  - AISC project approval – 21 July 2021
  - draft 1 consultation – 1 December 2021 – 28 Feb 2022
  - stakeholder validation – May 2022
  - quality Assurance – June/July 2022
  - final consultation with states and territories – August 2022
  - CFE submitted for approval – August/September 2022.

5.3 Delivery or implementation issues

- A key project aim is to introduce the new units of competency to native qualifications in the CPC Training Packages (e.g., plumbing and gas). This approach will be tested and fine-tuned within a broad section of stakeholders to ensure the inclusion of the units is fit for purpose and does not generate any unintended consequences.
- It is expected that the new hydrogen-based units of competency, once developed, will be incorporated into appropriate CPC Plumbing and Gas qualifications. It is also anticipated that the qualifications will include new units of competency that will be updated through a minor release and not impact on equivalency. It is intended that the inclusion of the units will strengthen existing employment outcomes.

- RTOs do not currently have the knowledge to create the facilities or capacity to deliver CPC hydrogen training. Key engagement with training providers is key to ensure there is capacity to deliver and assess hydrogen based competencies when endorsed.

6. Implementing the Skills Minister's Priority reforms for Training Packages (2015 and October 2020)

- The competencies being proposed in this case for change can be applied to multiple training packages including UEG, UEE, AUM, AUR, AVI, MAR, MEM, TLI, and UEP. This will allow for recognition of prior learning if transferring between occupations.
- The competencies proposed for development can support candidates undertaking work in the gas industry upstream from the metre.

This Case for Change was agreed to by the [name] IRC

Name of Chair	Stuart Maxwell
Signature of Chair	
Date	15/06/21

Attachment A: Training Package components to change

[Artibus Innovation]

Contact details: [Insert contact details]

Date submitted: [Insert date submitted]

Project number	Project Name	Qualification/ Unit / Skillset	Code	Title	Details of last review *(endorsement date, nature of this update transition, review, establishment)*	Change Required
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3001	Store and handle hydrogen	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3002	Install and commission for hydrogen Type A appliances	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3003	Maintain and service for hydrogen Type A appliances	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3004	Disconnect and reconnect for hydrogen Type A appliances	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3005	Calculate and install ventilation for hydrogen Type A appliances	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3006	Install and commission for hydrogen Type B appliances	New unit development	New

Project number	Project Name	Qualification/ Unit / Skillset	Code	Title	Details of last review *(endorsement date, nature of this update transition, review, establishment)*	Change Required
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3007	Maintain and service for hydrogen Type B appliances	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3008	Disconnect and reconnect for hydrogen Type B appliances	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3009	Safe termination of vent lines for hydrogen	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3010	Install hydrogen storage capacity up to xxxx (storage size to be determined).	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3011	Commission and decommission hydrogen combustion systems	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3012	Commission and decommission hydrogen fuel cell and electrolysers	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD3013	Inspect, service and maintain hydrogen fuel cell and electrolysers	New unit development	New
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD4001	Undertake purging	New unit development	New

Project number	Project Name	Qualification/ Unit / Skillset	Code	Title	Details of last review *(endorsement date, nature of this update transition, review, establishment)*	Change Required
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD4002	Size and design consumer hydrogen systems	New unit development	**New**
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD4003	Water treatment and wastewater	New unit development	**New**
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD4004	Size and design flue systems for hydrogen appliances	New unit development	**New**
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD4005	Characteristic and chemistry of hydrogen	New unit development	**New**
1	Hydrogen – Plumbing and Gas	Unit	CPCHYD4006	Compression and cooling/chilling of hydrogen	New unit development	**New**

Attachment B: Job role, enrolment information, the number of RTOs currently delivering these qualifications

Please set out the job roles to be supported through the updated qualifications, enrolment data over the past three years in which data is available for each qualification, completion rates for each qualification, and the number of RTOs delivering these qualifications.

Not applicable.

Job role	Qualification to be updated to support the job role	Enrolment data (for the past three years)	Completion rates (for the past three years)	Number of RTOs delivering (for the past three years)

Attachment C: List of stakeholders that actively participated in the consultation process of the Case for Change

*In italics: Working Group Members

Name of stakeholder	Title	Organisation	Organisation type (e.g. Employer, peak body, union, RTO, regulator)	Jurisdiction/town/city (e.g. NSW/Sydney)
Ken Gardner	*(Working Group Chair)*	*IRC Member*	*IRC – Construction, Plumbing and Services*	*VIC*
Shayne La Combre	*CEO*	*Plumbing Industry Climate Action Centre (PICAC)*	*Training provider*	*VIC*
Robert Edwards	*Director*	*H2 Networks | MPA ACT*	*Peak body*	*ACT*
Glenn Menzies	*Director*	*Plumbing and Pipe Trades Employees Union (PPTEU)*	*Union*	*NATIONAL*
Jen Mason	*Senior Policy Advisor*	*Victorian Building Authority*	*Regulator*	*VIC*
Gary O'Halloran	*Director*	*Hydrogen Centre of Excellence Training Centre*	*Training provider*	*Qld*
Rian Kelso	*Trainer/Advisor*	*Hydrogen Centre of Excellence Training Centre*	*Training provider*	*Qld*
Kent Vickers	*Director*	*Master Plumber Australia NZ*	*Peak body*	*Qld*
Nathan Morgan	*Lead Plumbing Trainer*	*Hydrogen Centre of Excellence Training Centre*	*Training provider*	*Qld*
Paul Beaumont	*Senior Inspector*	*Resources Safety and Health, Qld*	*Regulator*	*Qld*
Bruce Hansen	*Gas Networks Advisor*	*EVO Energy*	*Employer*	*ACT*

Name of stakeholder	Title	Organisation	Organisation type (e.g. Employer, peak body, union, RTO, regulator)	Jurisdiction/town/city (e.g. NSW/Sydney)
Penny Cornah	*CEO*	*Master Plumbers Australia Qld*	*Association*	*Qld*
Ernie Kerscheter	*Trainer*	*Master Plumbers Australia Qld*	*Association*	*Qld*
Gary Bath	*Trainer/Advisor*	*Master Plumbers Australia NZ*	*Association*	*VIC*
Bridget	Policy Officer	Department of Customer Service	Regulator	NSW
Steven Deans	Gas fitter and plumber	Pipeline Professionals Ql	Employers/Industry	QLD
Gerard Irwin	Plumbing and Building Inspector		Employers/Industry	QLD
Kurt lewis	Mixed type b approval authority/ qualified trainer and assessor / plumber and gasfitter	Advanced type b gas solutions	Association	Qld
Kayne Herriman	Electrician/RPEQ Electrical Engineer/Gas Work Authorisation (QLD)	Hazardous Area Specialists	Employers/Industry	QLD
Michael Creedy	Senior Inspector Petroleum and Gas	RSHQ	Regulator	Queensland
Ben Mitchell	Director of Innovation & Marketing	Nitto Denko Australia	Employers/Industry	SA
Nathan Morgan	Lead Plumbing Trainer	The Service Trades College Australia	Training provider	Queensland
Brendon Pola	Senior Technical Advisor ((Complaints)	Victorian Building Authority	Regulator	Victoria

Name of stakeholder	Title	Organisation	Organisation type (e.g. Employer, peak body, union, RTO, regulator)	Jurisdiction/town/city (e.g. NSW/Sydney)
Claire Howe	CEO	Master Plumbers Association ACT	Association	ACT
Robert Edwards	Director	6 Star Hot Water & Plumbing	Employers/Industry	ACT
Joe Kremzer	GM Policy	Australian Hydrogen Council	Peak body	National
Andrew Ayton	Manager, Gas and Safety	Service Tasmania	Regulator	TAS
Beth Norman		Department of Energy and Public Works	Regulator	Qld
Darrel Vecchio	CEO	Bixmatrix	Training provider	QLD
Frank Spinelli	Compliance Manager	Fair Trading	Government	NSW
Gerard Irwin	Plumbing and Building Inspector	Banana Shire Council	Council	Qld
Linda Johnston	Chief Education Officer	TAFENSW	Training provider	NSW
Mark Frazer	Manager	ACT – Government	Government	ACT
Michael Bennet	General Manager	Master Plumbers Association	Association	NSW
Rodney Jackson	Director Construction and Engineering	TAFENSW	Training provider	NSW
Ruben Gao	Team Leader	Victorian Building Authority	Regulator	VIC
Russell Martin		Department of Energy and Public Works	Regulator	Qld

Name of stakeholder	Title	Organisation	Organisation type (e.g. Employer, peak body, union, RTO, regulator)	Jurisdiction/town/city (e.g. NSW/Sydney)
Samantha Giles	Manager, QBCC Strategy Policy	Department of Energy and Public Works	Regulator	Qld
Scott Brown	Officer Worker	Service Tasmania	Regulator	TAS
Sue Wells	Senior Program Officer	STA	STA	VIC
Teresa Signorello	CMM	Holmesglen	Training provider	VIC
Michael Broomhead	Manager Training	ATCO	Training provider	Qld
Dean Solmundson	Senior Manager Technical Services	ATCO	Training provider	Qld

Attachment D: Issues Raised by Stakeholders during consultation on the development of the Case for Change

Stakeholder Type	Issues Raised	IRC's Response to Issues Raised
Industry Reference Committee (IRC) Representatives	No issues raised by the IRC.	
Peak Industry Bodies	The industry needs to have access to training requirements that support hydrogen activity downstream of the gas meter.	The IRC has supported the development of the Case for Change, which address the identified competency gaps.
Employers (Non-IRC)	The industry needs skilled/qualified workers that can support/service current hydrogen technologies (e.g., Green Energy Hydrogen Battery, Lavo).	The IRC has supported the development of the Case for Change to ensure unit development is approved by the AISC.
Regulators	No issues raised.	
Registered Training Organisations (RTOs)	Competencies addressing current and emerging market demand relating to hydrogen needs to be developed. The draft paper has proposed the writing of specific units for hydrogen appliances and associated work. Relevant existing units can be updated so that the skill sets for a gas fitter remains the same no matter what fuel is being used in the gas appliance. In my opinion the following units do not require development as there are existing	A Case for Change to address identified gaps is being developed. The Case is putting forward a framework that supports existing and emerging competency requirements. Type A and B units of competency native to the CPC Construction, Plumbing and Services Training Packages, were assessed to see whether they will support hydrogen. It was determined that including hydrogen to existing Type A and B competencies would not be fit for purposes. Plumbing or gas fitters working with hydrogen downstream of the gas meter will require new skills and knowledge (e.g., understanding pressure levels, how

	units in the CPC package that can be updated to include Hydrogen requirements, and the core skills for hydrogen gas – in comparison to using natural gas or LP Gas – are the same.	products are manufactured, joining techniques and/or threaded joints).
Training Boards/Other	No issues raised.	
State and Territory Training Authorities (STAs)	NSW STA support Case with following commentary: • there needs to be a strong focus on developing qualified/skilled trainers and assessors to deliver the new skills, and consideration given as to how segments of the existing workforce can be retrained or upskilled to meet this need • there is an element of crossover with the electrical industry, since working with hydrogen can often involve electrical components. For example, plumbers "*Disconnect and reconnect Type A gas appliances"* are required to hold an additional restricted electrical license • consideration also needs to be given to retaining of the industry that refills gas cylinders, currently being LPG cylinders. VIC STA did not support the Case: To present a compelling case, the proposal needs more detail including background in-formation and rationale for the change from the previous CfC. Commentary regarding stakeholder consultation and membership of	The IRC will ensure the feedback provided on upskilling the workforce is addressed through the development phase. Regarding unit overlap/crossover, this has been addressed by the Working Group. The proposal that forms part of this Case has been developed to ensure there is no duplication of outcomes. A response to the Victorian STA was provided addressing their concerns. The Case was amended to ensure these their concerns have been addressed.

	the Working Group would help build the case. Nominate the proposed qualifications that will package the new units and provide clarity around employment outcomes. Strengthen the response to the consideration of existing products. Accredited courses VBQU508 and 509 were referenced. Should VBQU510 be considered? Reference and detail the work being undertaken by AIS, currently at CfE stage, regarding (13) revised units, (6) new units and (3) skill sets related to Hydrogen gas technology and purported to be relevant across industries.	
Unions	No issues raised.	
Please add other categories as appropriate		

Attachment E: List of stakeholders to be contacted as part of the development of the Case for Endorsement

Name of Stakeholder	Title	Organisation	Organisation type (e.g. Employer, peak body, union, RTO, regulator)	Jurisdiction/town/city (e.g. NSW/Sydney)
		Government of Renewable Energy Agency	Government	National
		South Australia Government	Government	SA/National
		Department of Industries and Regional Development	Government	WA
		Australasian Fire and Emergency Services Authorities Council	Government	National
		AIS and PWC	SSO	National
		CSIRO	National Research Institute	National
		Australian Energy Council	Peak body	National
		Hyundai Motor Com-pany	Business	National
		Australian Gas Networks	Government/Association	National
		ENGIE	Business	National
		Fortescue Metals Group (Fortescue)	Business	TAS

		HYDRICITY	Business	National
		EVO Energy	Business	National
		Origin Energy	Business	National
		Australian Gas Infrastructure Group	Business	National
		BHP	Business	National
		Queensland Nitrates(QNP); Neoen; Adivisan (Worley Group)	Business	QLD
		Regulators	Regulators	National
		STAs	VET stakeholders	All states and territories
		All stakeholders register in newsletter	Includes training providers, unions, peak bodies, businesses and associations	National

Attachment F: Consideration of existing products

What is being proposed

Traditional combustion stream	Fuel cell / electrolysis stream
Purpose of stream: this stream is designed to build on traditional plumbing skills and knowledge. **What it covers:** safe handling of hydrogen, understanding the different pressures and levels of condensation, jointing techniques and threaded joints, cylinder requirements, different manufacture/product/certification requirements, commission and decommission of hydrogen-based appliances.	**Purpose of stream:** this stream is designed to be an additional non-traditional plumbing skill set to support industry practitioners meet emerging market needs and demands. It will have a domestic/residential focus. There is currently no competency requirements or training that cover this area of work. **What it covers:** emerging and predicted technology, purging against manufacture specifications, sizing and designing consumer piping, water treatment, wastewater management.
1. CPCHYD3001 Store and handle hydrogen	1. CPCHYD3012 Commission and decommission hydrogen fuel cell and electrolysers
2. CPCHYD3002 Install and commission for hydrogen Type A appliances	2. CPCHYD3013 Inspect, service and maintain hydrogen fuel cell and electrolysers
3. CPCHYD3003 Maintain and service for hydrogen Type A appliances	3. CPCHYD4001 Undertake purging
4. CPCHYD3004 Disconnect and reconnect for hydrogen Type A appliances	4. CPCHYD4002 Size and design consumer hydrogen systems
5. CPCHYD3005 Calculate and install ventilation for hydrogen Type A appliances	5. CPCHYD4003 Water treatment and wastewater
6. CPCHYD3006 Install and commission for hydrogen Type B appliances	6. CPCHYD4004 Size and design flue systems for hydrogen appliances
7. CPCHYD3007 Maintain and service for hydrogen Type B appliances	7. CPCHYD4005 Characteristic and chemistry of hydrogen
8. CPCHYD3008 Disconnect and reconnect for hydrogen Type B appliances	8. CPCHYD4006 Compression and cooling/chilling of hydrogen
9. CPCHYD3009 Safe termination of vent lines for hydrogen	

Traditional combustion stream	Fuel cell / electrolysis stream
10. CPCHYD3010 Install hydrogen storage capacity up to xxxx (storage size to be determined)	
11. CPCHYD3011 Commission and decommission hydrogen combustion systems	

Components from the CPC Training Package

The Type A and B units of competency native to the CPC Construction, Plumbing and Services Training Packages, were assessed to see whether they will support hydrogen. The Working Group determined that including hydrogen to existing Type A and B competencies would not be fit for purpose.

The Working Group advised that plumbing or gas fitters working with hydrogen downstream from the gas meter will require new skills and knowledge (e.g., understanding pressure levels, manufacture products, joining techniques and/or threaded joints).

1. CPCPGS3046 Install LPG systems in caravans, mobile homes and mobile work-places
2. CPCPGS3047 Install LPG systems in marine craft
3. CPCPGS3048 Install gas pressure control equipment
4. CPCPGS3049 Install gas appliance flues
5. CPCPGS3051 Purge consumer piping
6. CPCPGS3052 Maintain Type A gas appliances
7. CPCPGS3053 Disconnect and reconnect Type A gas appliances
8. CPCPGS3054 Calculate and install natural ventilation for Type A gas appliances
9. CPCPGS3055 Install gas sub-meters
10. CPCPGS3056 Size and install consumer gas piping systems
11. CPCPGS3059 Install LPG storage of aggregate storage capacity up to 500 litres
12. CPCPGS3060 13. Install LPG storage of aggregate storage capacity exceeding 500 litres and less than 8KL
14. CPCPGS3061 Install and commission Type A gas appliances
15. CPCPGS4011 Design and size consumer gas installations
16. CPCPGS4022 Service Type A gas appliances
17. CPCPGS4023 Install, commission and service Type B gas appliances

Components from the UEG Training Package

The competencies in the UEG Training Package support hydrogen activity upstream from the gas meter, which includes the distribution, transmission, storage and production. The key difference between what is being proposed in the Case for Change: Hydrogen – Plumbing/Gas is that these units focused on activity downstream from the gas meter. There is both a skills and industrial demarcation between what type of activity is undertaken up or downstream from the gas metre as it relates to hydrogen.

1. UEGNSG121Y Prepare safe design specifications of a gas system
2. UEGNSG136Y Carry out transmission pipeline construction work activities
3. UEGNSG204Y Coordinate and conduct gas distribution pipeline repair and modifications
4. UEGNSG207Y Coordinate construction, laying and testing of gas distribution pipelines
5. UEGNSG216Y Commission or decommission gas distribution pipelines
6. UEGNSG220Y Construct and lay polyethylene gas distribution mains
7. UEGNSG223Y Construct and lay steel gas distribution pipelines
8. UEGNSG224Y Construct and lay copper and stainless-steel gas distribution pipelines
9. UEGNSG228Y Construct and lay large copper gas distribution pipelines
10. UEGNSG325Y Coordinate the operation of relevant plant and equipment for transmission pipeline construction
11. UEGNSG327Y Coordinate transmission pipeline construction operations
12. UEGNSG333Y Work in proximity of transmission pipeline construction plant and equipment
13. UEGNSG344Y Commission or decommission gas transmission pipelines
14. UEGNSG969Y (NEW UNIT) Commission, operate and maintain electrolysers
15. UEGNSG970Y (NEW UNIT) Fault find and repair hydrogen storage equipment
16. UEGNSG978Y (NEW UNIT) Monitor and control hydrogen in gas infrastructure
17. UEGNSG979Y (NEW UNIT) Handle hydrogen gas*
18. UEGNSG980Y (NEW UNIT) Inject hydrogen gas into distribution pipelines*
19. UEGNSG981Y (NEW UNIT) Inject hydrogen gas into transmission pipelines
20. UEGNSG982Y (NEW UNIT) Apply safety practices, procedures, and compliance standards for working with hydrogen
21. UEGNSG983Y (NEW UNIT) Undertake routine hydrogen storage operations

Attachment G: Letters of Support

H2 Networks
All about information and collaboration
rob6star@tpg.com.au +61 2 6161 9417

June 6th, 2021

Artibus Innovation

Support for the project: **Hydrogen – Plumbing / Gas**

H2Networks is an employer in the gas fitting, plumbing and electrical trades.

Through H2Commercial and H2Homes, we work with hydrogen technology manufacturers to provide, support and servicing of hydrogen equipment. We are already in discussions with manufacturers to begin rolling out new hydrogen technologies this year and early next year.

At present we are required to seek hydrogen training from the original equipment manufacturers (OEMs). However, because OEMs typically want to protect their IP, some are not willing to provide the training we need.

We also believe that a skilled hydrogen workforce will promote the uptake of hydrogen technologies for production storage and end use applications. This will help accelerate the growth in our business.

We welcome the timely development of VET hydrogen training packages and believe the 19 proposed units of competency meet our requirements.

Yours Sincerely

Robert Edwards, Director.

THE SERVICE TRADES COLLEGE
AUSTRALIA

15th of June 2021

Nathan Morgan
29 Kirkston Place
Pine Mountain, Qld, 4306
Phone: 0413 553 951

Letter of Support – Hydrogen Case for Change

To Artibus Innovation,

I, Nathan Morgan, Lead Plumbing Trainer of The Service Trades College Australia, would like to express my support for the 'Hydrogen Case for Change' project. Through participation in the working group to identify the education and skills requirements it is clear that Hydrogen will be utilised on a broader scale in the future, and it is therefore necessary to ensure the workforce has the skills required to safely and efficiently install, test, commission and maintain these systems for consumers.

The Service Trades College Australia is an industry owned, non-for-profit, Registered Training Organisation that delivers plumbing and gas fitting apprenticeship training in Queensland. The Service Trades College Australia provides training services for 100's of employers and apprentices each year, contextualising the training to meet the commercial markets and the ever-evolving skills required by plumbers and gas fitters in today's workforce. The Service Trades College Australia recognise the need for the development of knowledge and skills to incorporate Hydrogen usage into the Australian market safely and efficiently. Education and Training will be paramount if Hydrogen gas is to be incorporated into everyday uses, which is recognised as an important step in ensuring Australia remains competitive in the global markets and economies.

For the reasons above, I support the Hydrogen Case for Change.

Kind Regards,

Nathan Morgan
Lead Plumbing Trainer
The Service Trades College Australia

Resources Safety and Health Queensland (RSHQ) is the safety regulator for the gas industry in Queensland.

The regulatory framework administered under the *Petroleum and Gas (Production and Safety) Act 2004* by RSHQ includes licence and authorisation provisions in relation to carrying out *gas work*.

The legislation currently prescribes hydrogen (H2) as a *fuel gas* and as such any *gas work* in relation to H2 would be licensed work.

RSHQ sees the development of nationally recognised competencies in relation to H2 as critical in supporting a safe and effective H2 future in Australia.

Please take this email as support for the 'Case for Change' to be presented to the Australian Industry and Skills Committee on 21 July 2021.

In addition, I would like to offer my time and experience to any working group that is formed to develop these units should the project be approved.

Regards Paul,

Paul Beaumont

EngTech MIGEM
Principal Inspector - Gas work
Petroleum and Gas Inspectorate
Resources Safety Health Queensland

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CEPU Plumbing Division

Communications. Electrical and Plumbing Union

Plumbing & Pipe Trades Employees Union

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16 June 2021

Emeritus Professor Tracey Horton AO,
AISC Chair
C/- Artibus
373 Elizabeth Street
North Hobart TAS 7000

Dear Professor Horton

"The Case for Change" - Hydrogen Training Package Development

Renewable hydrogen is emerging as a key technology in Australia's energy future, with Australia's National Hydrogen Strategy (November 2019) outlining a national commitment and process for its uptake and utilisation in various ways across the economy.

To ensure Australia grasps the hydrogen opportunity, and that hydrogen is safely integrated into the national energy mix, training for those who work on and with hydrogen is vitally important.

In that context, we note that the Construction, Plumbing and Services Industry Reference Committee (IRC) has been working with key industry stakeholders to develop a hydrogen skills package for approval by the Australian Industry and Skills Committee (AISC).

We are writing to indicate to the Committee our strong support for the proposed new package. We believe the case for change as proposed is robust and comprehensive.

The proposed package is underpinned by two streams – combustion and fuel cell electrolysis. We believe the **11 new hydrogen-based units** as proposed will align well with traditional combustion type of work and will help ensure existing skills gaps are addressed. In terms of emerging skill requirements, particularly around fuel cells and electrolysis, we **support the 8 new units of competency** proposed.

In combination, we believe the existing and emerging units, as proposed, create a hydrogen training package which will support the take up of this exciting new clean energy opportunity.

Yours sincerely

Federal Secretary

16 June 2021

Building the Plumbing
Workforce of the Future

Emeritus Professor Tracey Horton AO
AISC Chair
C/- Artibus
373 Elizabeth Street
NORTH HOBART TAS 7000

Dear Professor Horton

"The Case for Change" - Hydrogen Training Package Development

The Plumbing Industry Climate Action Centre (PICAC) is an industry partnership supported by the Plumbing and Pipe Trades Employees Union, Master Plumbers and Mechanical Services Association of Australia, National Fire Industry Association and the Air Conditioning and Mechanical Contractors Association. These are all the peak stakeholders in the plumbing industry.

PICAC has industry led training facilities in Victoria (Brunswick, Geelong and Narre Warren), New South Wales (Lidcombe) and Queensland (Beenleigh and Brendale).

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PLUMBING TRADES EMPLOYEES UNION
Communications, Electrical and Plumbing Union

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17 June 2021

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Yours sincerely

Theo Samartzopoulos
State Secretary

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AISC Chair
C/- Artibus
373 Elizabeth Street
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Kind regards

Penny Cornah
Executive Director