Jobs and Skills Australia

Clean Energy Workforce Capacity Study

Discussion Paper Response

by

National Australian Apprenticeship Association

1st May 2023

1. Background

The National Australian Apprenticeship Association represents the providers of the Australian Apprenticeship Support Network (AASN) that organise and support all apprentices and trainees in Australia.

This paper responds to the Jobs and Skills Australia Clean Energy Workforce Capacity Study Discussion Paper with a primary focus on the role apprenticeships and traineeships will play in the overarching goal of creating a net zero emissions economy by 2050. It draws on the AASN providers 25-year role administering the apprenticeship system and their recent more experience implementing the New Energy Apprenticeships program for the federal government.

AASN providers offer a Universal service that arranges the sign up and commencement of apprentices and trainees, then provides regular face to face monitoring of their progress. This is complemented by a Gateway service that supports school students to consider a VET pathway and matches them to employers.

There are 9,581 schools in Australia with over 4.03 million students[1]. Each year just over half a million students are in senior secondary (years 11 and 12) schooling. In 2021 around 95,400 young people made the school to work transition using an apprenticeship or traineeship.

There are currently 30,000 gateway places available for network providers to assist students with this transition. As a result, the network services around 3,000 schools each year.

AASN providers also have an In-Training Support service to mentor apprentices and trainees in need of additional supports. This service is available to around 11% of the 405,000 apprentices and trainees currently employed in Australia.

The Association welcomes the opportunity to provide a response to the Discussion Paper. Our response is provisional in nature because like JSA we are formalising the Board's position on this complex area, with further work being undertaken in May and June 2023.

The Association's initial research of clean energy and net zero policy settings in other OECD countries indicates that:

- Many jobs are likely to change as the Australian economy is decarbonised, due to new approaches, technology, and regulation.
- Technical skills will be paramount in the transition, starting with the "electrification of everything" and powering the grid with renewables.
- Many existing trade roles will need to be upgraded to account for the new policy settings and regulatory requirements.
- Some altogether new trades may emerge, but probably not many. For example, it may take 30 years for some skills like automotive mechanics to fully transition to electric vehicle mechanics, as the stock of current vehicles are replaced over time.
- Apprenticeship training will need to be future focused not backward looking but will also need to account for skills mix transition.
- The training system needs to be future focused and have the capacity to support the transition as a precursor.

[1] https://www.abs.gov.au/statistics/people/education/schools/latest-release

2. New Energy Apprenticeships

New Energy Apprenticeship occupations on the current Australian Apprenticeships Priority List include:

Airconditioning and Mechanical Services Plumber
Airconditioning and Refrigeration Mechanic
Automotive Electrician
Cabler (Data and Telecommunications)
Civil Engineering Draftsperson
Civil Engineering Technician
Electrical Linesworker
Electrician (General)
Electrician (Special Class)
Fitter (General)
Fitter and Turner
Fitter-Welder
Gasfitter
Glazier
Joiner Plumber (General)
Pressure Welder
Roof Plumber
Sheetmetal Trades Worker
Small Engine Mechanic
Technical Cable Jointer
Telecommunications Cable Jointer
Telecommunications Linesworker
Telecommunications Technician
Welder (First Class) Electronic Equipment Trades Worker*
Electronic Instrument Trades Worker (Special Class)
Electroplater
Engineering Patternmaker
Mechanical Engineering Draftsperson
Mechanical Engineering Technician
Plastics Technician
Technicians and Trades Workers nec
Vehicle Body Builder
Agricultural and Agritech Technician

These 34 occupations can be studied through a total of 111 current apprenticeship pathway qualifications[2]. Over the last 12 months[3] there have been 73,172 commencements in these qualifications[4], 28.7% of all apprenticeship and traineeship commencements, indicating the potential scale of the clean energy related skills pipeline “in scope” as the economy transitions.

However, this list is not inclusive of all potential clean energy pathways, it represents the current policy settings for New Energy Apprenticeships at ANZSCO major group 3 and 4 level. It does not for example cover ANZSCO major group 7 and 8 level such as crane

[2] 190 qualifications have been used in the last 12 months with 79 now being superseded or deleted.
[3] Latest available figures are from October 2021 to September 2022. Integrated Information Service.
[4] 48,399 commencements in qualifications not superseded, outlined in Annexure 1 below.

operators who may work erecting wind turbines, mobile plant operators or tunnel construction workers building pumped hydro facilities[5].

What the current New Energy Apprenticeship occupations on the Australian Apprenticeship Priority List does demonstrate is that technical skills will play a major part in the transition to a low carbon economy and apprenticeships are a primary pathway for the development of these skills.

Once Jobs and Skills Australia (JSA) has completed the clean energy workforce capacity study the Australian Apprenticeships Priority List should be updated accordingly, including a separate list required for the clean energy workforce transition.

The key issues for consideration from a technical trade perspective are:

- Are all the relevant trades and skills occupations accounted for in the capacity analysis? The discussion paper outlines a role for most but not all of those that should be considered. This paper outlines potential gaps in section 3 below.
- How will the system attract and retain trainers with the new skills required?
- How will current tradespeople need to upgrade their skills in light of new policy and regulatory settings? Will continuing professional development (CPD) models need to be extended to all trades required for the transition?
- How will new apprenticeship qualifications be introduced, and their uptake encouraged? Current uptake of new qualifications such as Cert III in Renewable Energy and Cert III in Automotive Electrical Vehicle Technology are slow. With preference given to the more widely accepted and long-standing qualifications that enable electricians to be licenced and mechanics to work across all vehicle types.
- What are the anticipated commencement and completion levels required to ensure a smooth pipeline of the skills required?
- How will apprenticeship incentives be tailored to support employers and their apprentices to develop the new skills required?
- How can a more diverse and inclusive workforce be created, breaking down some of the gender polarised workplace cultures that currently exclude large sections of the community from participating in our clean energy future.
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AASN providers experience also shows that factors that impact on the ability of an apprentice to complete are often amplified where new industries:

- Are geographically dispersed across regional and remote areas.
- Have immature regulation.
- Under-developed logistics chains.
- Have a “start -up” culture.
- Have rapid product and industry evolution.

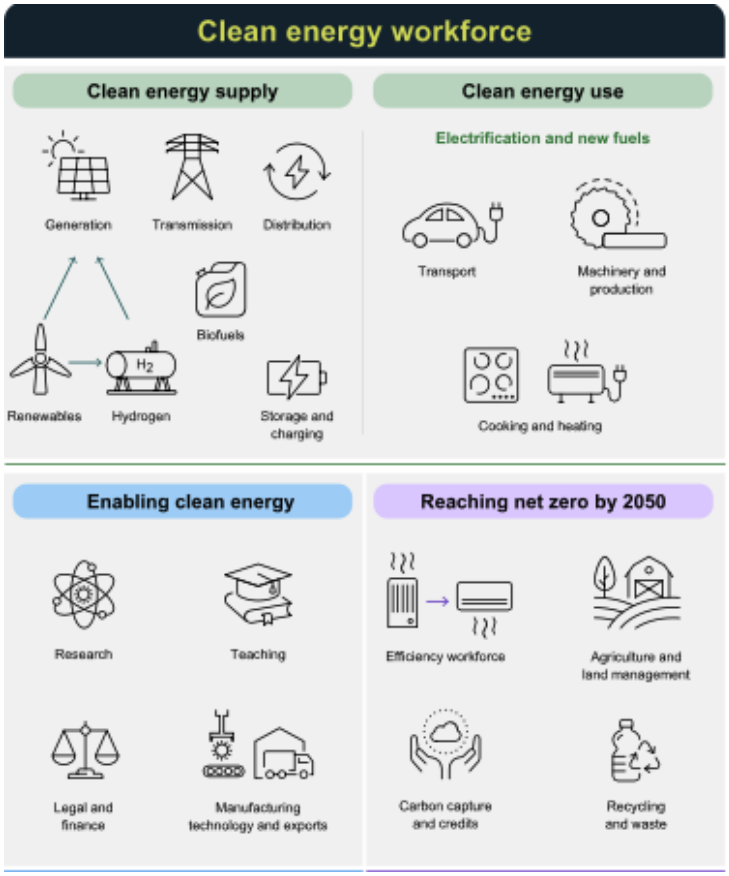
The clean energy sector could have many of these attributes in the years ahead and this many require additional levels of support for the apprentices that work in the sector.

[5] Along with many others occupations at ANZSCO level 7 & 8. However, there are some occupations in the current list that many have only a small or incidental role to play in the energy transition. A second iteration of the list is currently being developed by DEWR.

3. Areas requiring additional consideration.

The Association supports the definition of the clean energy workforce developed by JSA and the conceptual framework outlined in the diagram below.

The focus of the capacity study is on the clean energy workforce, supporting the overall goal is to reach zero net emissions by 2050.



The following analysis highlights areas for additional consideration that *cut across* the clean energy agenda, but do not seem well represented in the Discussion Paper analysis.

Methane

The discussion paper is largely silent about the role methane emissions play as a greenhouse gas, which is responsible for about 30% of global heating because it is 80 times more potent than carbon dioxide[6]. The International Energy Agency recently estimated that Australia emits 2.23 million tonnes of pure methane, which is 55.75 million tonnes CO2-e[7] out of the total 487 million tonnes of CO2-e annually[8]. The increase in methane emissions is largely due to a more accurate satellite-based estimation of fugitive emissions from the mining sector.

[6] https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them

[7] https://www.iea.org/data-and-statistics/data-tools/methane-tracker

[8] https://www.dcceew.gov.au/about/news/australias-greenhouse-gas-emissions-march-2022-quarterly-update#:~:text=The%20report%20estimates%20Australia's%20total,reductions%20in%20emissions%20from%20electricity

Technology exists to capture these emissions at source and convert them into an energy supply that the mine site can use. The skills and occupations required to undertake this work should be included in the capacity study. It is a dual enabler of the net zero by 2050 goal and intersects with the Federal Government's recent revamp of the safeguard mechanism covering the 215 most polluting facilities in Australia.

Turning the mining sector's fugitive methane emissions into useable energy is a national priority. For example, Chevron's Gorgon gas development has fugitive emissions (including CO2) equivalent to the emissions from 2.5 million internal combustion cars[9], and it is just one of the 215 operations covered by the safeguard mechanism.

Similarly in the agricultural sector there are skills required to support the development of the enteric emissions reduction from cattle through new feedstock additives and management approaches.

Fluorine

The Montreal protocol to which Australia is a signatory is designed to protect the ozone layer by phasing out chlorofluorocarbons (CFC's) hydrochlorofluorocarbons (HCFCs) and fluorine gasses used in industrial processes and air-conditioning.

The skills required to support these transitions should be included in the capacity study as the economy switches to electrification of heating and cooling systems for domestic and commercial applications, phasing out use of fluorine gasses in the process.

The replacement gasses require new materials handling and safety requirements as many are flammable. Ensuring the refrigeration and air-conditioning sector has the skills needed to support this transition is also a key goal on net zero emissions by 2050.

Waste to Energy

Another area that seems under-represented in the Discussion Paper is the waste to energy sector. This can include:

- Industrial scale incinerators producing electricity to minimise landfill.
- Methane capture and energy production from landfill sites.
- Effluent and methane (biogas) capture from piggeries used to power the farm.
- Biomass use from forestry slash to generate power.

Sustainable Aviation Fuels

Similarly, there is a global focus on sustainable aviation fuels, with aviation potentially at risk from future international agreements to limit CO2 and Nitrous Oxide emissions, unless new more sustainable fuels can be developed and deployed.

[9] https://www.theguardian.com/environment/2023/apr/21/emissions-wa-gas-project-chevron-carbon-capture-system-pilbara-coast?CMP=Share_iOSApp_Other

Local government focus

Much of the regulatory burden in the transition will fall on local governments. The implementation of more energy efficient building standards is managed locally, along with the verification of commercial construction projects.

Local governments also have a key role in limiting emissions from wastewater and landfill sites, maintaining key local transport infrastructure that enables the transition and the full suite of civil engineering projects that assist communities adapt to the impact of global heating. For example, rebuilding bridges after floods and roads after bushfires and extreme weather events.

Some of the skills required by local governments are directly involved in the clean energy transition and some are enabling and supportive of the transition[10]. This sector should be included in the capacity study.

Distribution network

As the uptake of electric vehicles increases, the distribution network will need to be reconfigured to enable EV charging and Vehicle to Grid capacity, potentially using vehicles as mobile batteries throughout the network.[11] This could shift the network from distribution only to a defacto energy retailer as load balancing initiatives are rolled out.

With the highest uptake of rooftop solar in the world the distribution network will also likely need to integrate battery storage at a zone substation level, requiring additional skillsets for the staff involved and a broader based electrical qualification for apprentices.

The distribution network is already a focus area for the capacity study, but JSA should ensure that related technologies in the road transport sector and battery technologies are included in the aspects under review. Many of the new enabling skills required will be at a high technical level with a potential role for AI configuration to overcome the new challenges associated with load balancing, micro and smart grid technologies.

New business models

A range of new industries and business models can be anticipated as the transition occurs. Current examples of these include:

- Electrification of Toyota Landcruisers for use in the underground mining sector. For example: https://gbauto.com.au/gb-electric-vehicles/
- Conversion of RVs, and caravans so they can be fully independent of the grid whilst running all conventional electrical appliances simultaneously. https://www.safiery.com/DIY-4WD

[10] https://alga.com.au/app/uploads/LG-Workforce-Skills-and-Capability-Survey-NSW-Report.pdf

[11] https://arena.gov.au/news/world-leading-electric-vehicle-to-grid-trial-in-act/

Some of the conversion skills are highly specialised at the moment but could become mainstreamed depending on their commercial success. Having, a strand of the study that anticipates these types of innovative businesses would be beneficial.

- BYD is an electric vehicle company that sold over 1 millions EVs in China last year, this year it has started importing vehicles to Australia and instead of creating a dealership network it is using mycar tyre and auto to undertake any servicing requirements at BYD owner's home or work. See: https://www.mycar.com.au/servicing/byd-car-servicing

This is a significant way to reduce the cost of new electric vehicles for Australian consumers. This will hasten the uptake of EVs in combination with the national roll out of EV charging stations and Vehicle to Grid applications.

Assessing the disruptive power of new business models and the skills implications should also be part of the capacity study.

4. Discussion Paper questions

4.1 What are the main barriers to employers recruiting and retaining workers with the skills required to support the clean energy transition?

A live issue in the New Energy Apprenticeships program is the difference between developing the requisite skills to be able to work in the clean energy transition and how they are applied. Whether they are applied in predominantly clean energy projects or not.

This creates complexity when an employer is asked to complete a declaration that the application of skills is in clean energy, when for example to get the full qualification and an electrical licence an apprentice needs to work across a broad range of project types.

ANZSCO codes don't help in this regard because they are focussed on skills and not their application. As the grid decarbonises and "everything is electrified" perhaps a third of apprenticeships[12] will be involved in the application of clean energy to some degree. So, for incentives to be structured appropriately the application threshold needs to be clearly identifiable and workable in the context of the apprenticeship construct.

In addition to these technical and definitional issues, the main barriers will be:

- Identifying enough potential candidates to fill the positions as part of the school to work transition.
- Addressing gender polarised workplace cultures to optimise uptake from groups historically under-represented in these industries.
- Low apprentice and trainee pay levels that lead to high levels of job switching before apprentices compete their trade.
- Having the training workforce available to train apprentices and re-train existing workers.

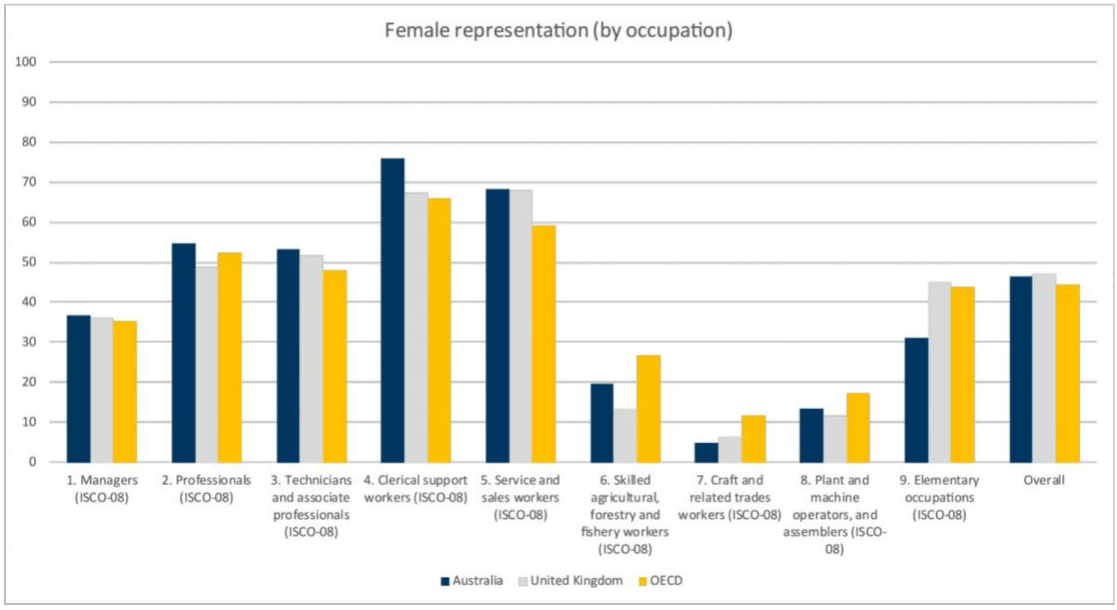
4.2 What barriers do priority social cohorts face in entering the clean energy workforce and how can they be overcome?

The Association has worked with RMIT to develop a range of recommendations to address workplace cultural issues that result from gender polarisation and entrenched discriminatory attitudes. This suite of approaches can also be used to increase diversity and inclusion more broadly by assisting particularly micro and small businesses to comply with existing legal requirements and promoting a workplace culture of inclusiveness and anti-discrimination.

Australia has a high level of gender polarisation of male dominated and female dominated occupations. With female dominated occupations generally attracting lower pay than male dominated ones. Across most occupation types, this polarisation is broadly similar to the OECD and the UK. But in trade related occupations Australia has less than half the gender diversity than in the OECD, and extremely low levels overall of around just 4% of women in "non-traditional" trades.

[12] Currently 28.7% of commencements are in apprenticeships that are included in the New Energy Apprenticeships subset of the AAPL.

Figure 1: Comparison of the female composition of occupations (by ISCO category) within Australia, the UK and the OECD**



This has two main impacts on apprenticeship completion levels. Firstly, male dominated occupations are more likely to be discriminatory towards female apprentices, recent RMIT research[13] on women in construction highlighted that; 95% of women reported being treated differently to male colleagues, 91% reported a lack of acceptance, 81% a lack of accountability and deterrents for inappropriate action and 51% a lack of support from their manager or teacher.

So fewer women seek out apprenticeships in these types of occupations because they *believe* they will be discriminated against, and of those that do, there is a higher non completion rate because they *are* discriminated against.

Secondly, male dominated occupations tend to be more macho and bullying, often making them unpleasant places to work. For example, for male non-completers 30.3% reported seeing or being bullied, whilst for female non-completers it was 44.7%[14]

Male dominated workplace cultures often breach existing anti-discrimination laws, but the level of sanction and consequence for these actions seems to be low.

Gender polarisation effectively halves the candidate base for apprentices with the aptitude and capability to complete a male dominated trade, which flows on to lower completion rates overall.

It's a significant contributor to why 73.8%[15] of non-completers cite employment related issues as the reason for dropping out of their apprenticeship or traineeship.

[13] Women in Construction; exploring barriers and supportive enablers of wellbeing in the workplace
[14] NCVER, Apprentice and Trainee experience and destinations 2019 – Page 21
[15] NCVER Apprentice and Trainee experience and destinations 2019 Page 15

The Association has proposed the following suite of measures to address these issues:

- Develop model policies and procedures to prevent sexual harassment and exclusion, supported by a voluntary code of conduct to promote best workplace practices and have zero tolerance for discrimination. (Based around Vic Govt Building Equality Policy)

- Recognise business "supporters and allies" that adopt and execute these policies. In New Zealand these are branded as "supporting women in trades" businesses.

- Provide training to the nominated supervisors of apprentices and trainees, to facilitate a day-to-day work environment free from discrimination and bullying.

- Double the priority workforce incentives for businesses that register as supporters and allies, implement the polices and have their supervisors undertake the training.

- All mentored female apprentices to have technology, such as a Women in non-traditional trades (WNTT) App, to notify their Apprenticeship Network Provider immediately of workplace incidents that need to be followed up, dealt with, and resolved.

- That Jobs and Skills Australia develop a National Trainer Workforce strategy that rapidly expands the number of female trainers involved in trade training. So that WNTT apprentices are taught by a gender balanced trainer workforce.

- Set a gender equity target for the 10% apprentice Training Guarantee requirements for government funded infrastructure projects. A 5% aspirational target for female apprentice labour on the project with a requirement for 2.5% as a minimum. (Vic target is 4%)

- Key industry players to have a compact with ANPs to pilot a "system wide saturation" approach for major infrastructure projects. The compact will ensure zero tolerance and best practice approaches that are supported by all stakeholders including head contractors, sub-contractor employers, unions, regulators, support groups, training providers and the apprenticeship support network.

These options assume a continuation of uncapped Gateway and ITS places for women in non-traditional trades.

4.3 What barriers do RTOs face in delivering courses specific to clean energy?

There are a number of interrelated barriers faced by RTOs wishing to expand their course offerings for clean energy. These include:

- The lag in the development of some Training Packages covering the new skills and technologies required.
- The lag in qualifications being added to the jurisdictional based lists for apprenticeships and traineeships.
- Attracting trainers with the appropriate knowledge and understanding of the new skills, technologies, and qualifications.
- Being able to retain trainers in a market where only 15.37% of the VET workforce are fulltime trainers[16] This being an unintended consequnce of the way the competitive training market is currently funded in the jurisdictions.
- New qualifications will often see slow adoption with employers preferring long standing qualifications which have been adapted to include relevant clean energy skills, rather than a new qualification that exclusively deals with the new skills. This is particularly true for licensed trades.
- Lack of mechanisms to encourage existing workers to retrain in the new skills, particularly at Diploma and Advanced Diploma level where many of the new enabling skills will reside.
- The cost of developing learning materials where the Training Package has many units, but the training is for a relatively niche area of the clean energy industry with comparatively low demand.[17]

The total quantum of funding available to the VET sector remains an implacable issue. VET funding has significantly lagged behind the increase in funding for the Higher Education and School Education sectors for the last 20 years.

Yet it is clear that the transition to a low carbon economy will rely on the skills developed and fostered in the VET sector, in particular relying on the integrated work-based learning undertaken through apprenticeships.

[16] Understanding the Australian VET training workforce, NCVER 2019. In 2019 there were 246,167 people in the VET workforce 29% or 71,379 of whom were trainers and assessors. Of these 53% were employed on a full time basis, 14% on a contract or temporary basis and 33% on a casual basis.

[17] For example, the Water Training package has over 150 units which costs providers many millions of dollars to develop learning materials for, but the 7 providers nationally have only a few thousand enrolments between them each year, making the development of these learning materials unviable.

4.4 What international experiences should JSA look at to establish an understanding of best practice?

The Association has undertaken a meta-analysis of the policies governments around the world have enacted to deal with adapting to a changing climate. Broadly speaking the policies fall into four areas:

- Policies that provide **substitutes for fossil fuels**, such as support for solar generation, pumped hydro projects, electric vehicle charging stations and wind turbines.
- Policies that **reduce emissions in other ways**, such as upgrading the transmission and distribution networks, grid level batteries, electrifying household appliances and heating, and fluorine gas technology replacement.
- Policies that **mitigate or adapt to direct impacts of global heating**, such as managed retreat, minimising heat effects on vulnerable people, improved emergency management and fire-fighting capacity, and just transitions for carbon intensive industries and workers.
- Policies that **align government actions with global climate goals**, such as the carbon border adjustment mechanism, electricity market redesign, climate trigger for approval of projects with high scope 3 emissions, international F-Gas action, and a national workforce skills policy.

In combination these policies and the other 60 covered in our research represent a roadmap to a fully decarbonised economy. After many years of policy stagnation this transition is underway in Australia with many of the overseas policies being customised and adopted here now.

A key element of best practice is "*cross cutting*". The term used in the UK to describe the vital collaboration between the various government departments working to achieve net zero emissions, ensuring the overarching goal drives an integrated policy response.

The Association's research is still underway and the NAAA Board is meeting later in May to examine best practice responses and to firm up its formal recommendations. The areas under consideration being:

- The potential need for training **centres of excellence** in areas critical to economic and societal security. For example, for the clean energy sector, the water industry, emergency management, and managed retreat sectors amongst many others.
- That potentially these may need to be fully funded and draw on **international best practice**.
- New models of **universal service obligation** could apply to these centres so that best practice is promulgated throughout the training system, perhaps through curriculum sharing.
- New funding models need to be considered for all providers so that trainers can have **secure employment** and rewarding career paths that underpin their ability **to maintain a future focus.**
- This may require **multi-year recurrent funding** across the provider spectrum, developing the **contestable training market 2.0** in the process.
- Trainer accreditation requirements may need to focus on how trainers have **currency in new approaches** rather than just the practices of the past.
- The existing workforce will need access to micro credentials enabling them to comply with new requirements. **Continuing professional development models** run by industry associations may need to be significantly expanded to drive this life-long learning.

- **Local provision that meets the hands-on learning styles** of many technically skilled workers and students should once again become the default mode of delivery for the sector.

The Association will forward a copy of the recommendations approved by the Board later in May.

Overall, the Association is strongly supportive of the approach to the capacity study taken by JSA. This is a vital enabling piece of work as the economy transitions to a net zero future.

Our analysis demonstrates that apprenticeships and traineeships will play a leading role in supporting that transition.

The Association would be happy to participate in any JSA clean energy workforce reference group meetings that consider these issues over the coming months.

Annexure 1 New Energy Apprenticeship occupations and current qualifications

ANZCO	New Energy Occupation	Apprenticeship pathway	Last 12 months Commencements
843111	Forestry Worker	Certificate III in Agriculture	953
842314	Livestock Husbandry Worker	Certificate III in Pork Production	48
362611	Gardener (General)	Certificate III in Permaculture	0
121000	Farmers And Farm Managers	Certificate IV in Agriculture	123
311112	Agricultural and Agritech Technician	Certificate IV in Protected Horticulture	0
121711	Broadacre Crop and Livestock Farmer	Certificate IV in Agribusiness	3
399999	Technicians And Trades Workers Nec	Certificate IV in Irrigation Management	24
121000	Farmers And Farm Managers	Diploma of Agriculture	1
121599	Broadacre Crop Growers nec	Diploma of Production Horticulture	0
362611	Gardener (General)	Diploma of Horticulture	4
234114	Agricultural Research Scientist	Diploma of Applied Agronomy	0
362611	Gardener (General)	Advanced Diploma of Horticulture	0
324211	Vehicle Body Builder	Certificate III in Automotive Manufacturing Technical Operations -	0
324211	Vehicle Body Builder	Certificate III in Automotive Manufacturing Technical Operations -	253
324000	Panelbeaters, And Vehicle Body Builders, Trimmers And Pain	Certificate IV in Automotive Manufacturing	0
324211	Vehicle Body Builder	Diploma of Automotive Manufacturing	0
321111	Automotive Electrician	Certificate III in Automotive Electrical Technology	1194
321211	Motor Mechanic (General)	Certificate III in Agricultural Mechanical Technology	392
321211	Motor Mechanic (General)	Certificate III in Marine Mechanical Technology	114
321211	Motor Mechanic (General)	Certificate III in Light Vehicle Mechanical Technology	4947
321214	Small Engine Mechanic	Certificate III in Outdoor Power Equipment Technology	88
321213	Motorcycle Mechanic	Certificate III in Motorcycle Mechanical Technology	218
321200	Motor Mechanics	Certificate III in Motor Sport Technology	0
321211	Motor Mechanic (General)	Certificate III in Heavy Commercial Vehicle Mechanical Technology	1767
321211	Motor Mechanic (General)	Certificate III in Mobile Plant Technology	1127
321211	Motor Mechanic (General)	Certificate III in Automotive Engine Reconditioning	28
321212	Diesel Motor Mechanic	Certificate III in Automotive Diesel Engine Technology	14
321212	Diesel Motor Mechanic	Certificate III in Heavy Commercial Trailer Technology	17
324211	Vehicle Body Builder	Certificate III in Automotive Body Repair Technology	550
321211	Motor Mechanic (General)	Certificate III in Automotive Underbody Technology	86
321211	Motor Mechanic (General)	Certificate III in Automotive Electric Vehicle Technology	0
149212	Customer Service Manager	Certificate IV in Automotive Management	14
321211	Motor Mechanic (General)	Certificate IV in Automotive Mechanical Diagnosis	141
321200	Motor Mechanics	Certificate IV in Motor Sport Technology	0
321111	Automotive Electrician	Certificate IV in Automotive Electrical Technology	0
321211	Motor Mechanic (General)	Certificate IV in Automotive Mechanical Overhauling	0
321211	Motor Mechanic (General)	Diploma of Automotive Technology	0
331212	Carpenter	Certificate III in Carpentry	12729
331213	Joiner	Certificate III in Joinery	188
334111	Plumber (General)	Certificate III in Plumbing	4080
334115	Roof Plumber	Certificate III in Roof Plumbing	638
334114	Gasfitter	Certificate III in Gas Fitting	6
334111	Plumber (General)	Certificate III in Fire Protection	325
334111	Plumber (General)	Certificate IV in Plumbing and Services	23
312511	Mechanical Engineering Draftsperson	Diploma of Fire Systems Design	3
312914	Other Draftsperson	Diploma of Hydraulic Services Design	0
342313	Electronic Equipment Trades Worker	Certificate III in Technical Security	3
342315	Electronic Instrument Trades Worker (Special Class)	Certificate III in Fire Protection Inspection and Testing	42
399999	Technicians And Trades Workers Nec	Certificate III in Swimming Pool and Spa Service	55
399999	Technicians And Trades Workers Nec	Certificate IV in Swimming Pool and Spa Service	0
312111	Architectural Draftsperson	Advanced Diploma of Building Design	0
342314	Electronic Instrument Trades Worker (General)	Diploma of Simulator Maintenance Management	0
342413	Telecommunications Linesworker	Certificate III in Telecommunications Network Build and Operation	38
342414	Telecommunications Technician	Certificate III in Telecommunications Technology	2278
313213	Telecommunications Network Planner	Certificate IV in Telecommunications Network Design	0
313214	Telecommunications Technical Officer Or Technologist	Certificate IV in Telecommunications Engineering Technology	562
262100	Database And Systems Administrators, And Ict Security Spec	Diploma of Information Technology	24
263312	Telecommunications Network Engineer	Advanced Diploma of Information Technology	2
322000	Fabrication Engineering Trades Workers	Certificate III in Engineering - Production Systems	0
323000	Mechanical Engineering Trades Workers	Certificate III in Engineering - Mechanical Trade	2554
399999	Technicians And Trades Workers Nec	Certificate III in Engineering - Composites Trade	17
341112	Electrician (Special Class)	Certificate III in Engineering - Industrial Electrician	64
323211	Fitter (General)	Certificate III in Engineering - Fixed and Mobile Plant Mechanic	447
322114	Metal Casting Trades Worker	Certificate III in Engineering - Casting and Moulding Trade	5
323000	Mechanical Engineering Trades Workers	Certificate IV in Engineering	422
312000	Building And Engineering Technicians	Diploma of Engineering - Advanced Trade	1
224712	Organisation And Methods Analyst	Diploma of Manufacturing Technology	0
224712	Organisation And Methods Analyst	Advanced Diploma of Manufacturing Technology	0

333111	Glazier	Certificate III in Glass and Glazing	1
322211	Sheetmetal Trades Worker	Certificate III in Surface Preparation and Coating Application	98
399999	Technicians And Trades Workers Nec	Certificate III in Fenestration	0
321211	Motor Mechanic (General)	Certificate III in Recreational Vehicle Service and Repair	113
324211	Vehicle Body Builder	Certificate III in Recreational Vehicle Manufacturing	75
324211	Vehicle Body Builder	Certificate IV in Recreational Vehicles	0
711514	Plastics Production MacHine Operator (General)	Certificate III in Polymer Processing	161
399916	Plastics Technician	Certificate IV in Polymer Technology	20
399916	Plastics Technician	Diploma of Polymer Technology	0
312913	Mine Deputy	Certificate IV in Resource Processing	0
312112	Building Associate	Certificate IV in Civil Construction	1205
312211	Civil Engineering Draftsperson	Certificate IV in Civil Construction Design	13
133513	Production Manager (Mining)	Diploma of Minerals Processing	0
312212	Civil Engineering Technician	Diploma of Civil Construction Management	3
312211	Civil Engineering Draftsperson	Diploma of Civil Construction Design	29
312211	Civil Engineering Draftsperson	Advanced Diploma of Civil Construction Design	0
312212	Civil Engineering Technician	Advanced Diploma of Civil Construction	0
342311	Business MacHine Mechanic	Certificate III in Business Equipment	0
342314	Electronic Instrument Trades Worker (General)	Certificate III in Computer Systems Equipment	0
342314	Electronic Instrument Trades Worker (General)	Certificate III in Custom Electronics Installations	0
342411	Cabler (Data And Telecommunications)	Certificate III in Data and Voice Communications	497
341111	Electrician (General)	Certificate III in Electrical Machine Repair	9
341111	Electrician (General)	Certificate III in Switchgear and Controlgear	0
341111	Electrician (General)	Certificate III in Electrotechnology Electrician	7777
342313	Electronic Equipment Trades Worker	Certificate III in Electronics and Communications	254
341111	Electrician (General)	Certificate III in Fire Protection Control	19
342315	Electronic Instrument Trades Worker (Special Class)	Certificate III in Instrumentation and Control	48
342313	Electronic Equipment Trades Worker	Certificate III in Security Equipment	116
341111	Electrician (General)	Certificate III in Appliance Service	29
342111	Airconditioning And Refrigeration Mechanic	Certificate III in Air Conditioning and Refrigeration	838
341111	Electrician (General)	Certificate III in Electrical Fitting	80
342314	Electronic Instrument Trades Worker (General)	Certificate IV in Computer Systems	0
342411	Cabler (Data And Telecommunications)	Certificate IV in Electrical - Data and Voice Communications	0
341111	Electrician (General)	Certificate IV in Installation Inspection and Audits	0
341111	Electrician (General)	Certificate IV in Electrical - Instrumentation	35
342111	Airconditioning And Refrigeration Mechanic	Certificate IV in Electrical - Air Conditioning Split Systems	0
341111	Electrician (General)	Certificate IV in Electrotechnology - Systems Electrician	0
342313	Electronic Equipment Trades Worker	Certificate IV in Electronics and Communications	3
342315	Electronic Instrument Trades Worker (Special Class)	Certificate IV in Electrical - Fire Protection Control Systems	0
342315	Electronic Instrument Trades Worker (Special Class)	Certificate IV in Industrial Electronics and Control	11
342315	Electronic Instrument Trades Worker (Special Class)	Certificate IV in Energy Management and Control	0
342315	Electronic Instrument Trades Worker (Special Class)	Certificate IV in Electrical - Rail Signalling	17
342314	Electronic Instrument Trades Worker (General)	Certificate IV in Video and Audio Systems	0
342315	Electronic Instrument Trades Worker (Special Class)	Certificate IV in Rail - Communications and Network Systems	0
341111	Electrician (General)	Certificate IV in Electrotechnology - Electrical Contracting	0
342315	Electronic Instrument Trades Worker (Special Class)	Certificate IV in Instrumentation and Control	1
341111	Electrician (General)	Certificate IV in Hazardous areas - Electrical	0
342111	Airconditioning And Refrigeration Mechanic	Certificate IV in Air Conditioning and Refrigeration Servicing	0
342111	Airconditioning And Refrigeration Mechanic	Certificate IV in Air-conditioning Systems Energy Management and	0
342111	Airconditioning And Refrigeration Mechanic	Certificate IV in Refrigeration and Air Conditioning Systems	0
341111	Electrician (General)	Certificate IV in Electrical Equipment and Systems	0
342315	Electronic Instrument Trades Worker (Special Class)	Certificate IV in Industrial Automation and Control	0
341111	Electrician (General)	Diploma of Electrical and Instrumentation	0
342111	Airconditioning And Refrigeration Mechanic	Diploma of Electrical and Refrigeration and Air Conditioning	0
341112	Electrician (Special Class)	Diploma of Electrical Engineering	2
341112	Electrician (Special Class)	Diploma of Industrial Electronics and Control Engineering	0
342111	Airconditioning And Refrigeration Mechanic	Diploma of Engineering Technology - Refrigeration and Air Conditic	0
342111	Airconditioning And Refrigeration Mechanic	Diploma of Air Conditioning and Refrigeration Engineering	0
341111	Electrician (General)	Diploma of Electrical Systems Engineering	0
312412	Electronic Engineering Technician	Advanced Diploma of Instrumentation and Control Engineering	0
312312	Electrical Engineering Technician	Advanced Diploma of Engineering Technology - Electrical	0
342111	Airconditioning And Refrigeration Mechanic	Advanced Diploma of Engineering Technology - Air Conditioning an	0
342111	Airconditioning And Refrigeration Mechanic	Advanced Diploma of Air Conditioning and Refrigeration Engineeri	0
399213	Power Generation Plant Operator	Certificate IV in ESI Generation Maintenance - Electrical Electronics	0
399213	Power Generation Plant Operator	Certificate IV in ESI Generation Maintenance (Mechanical)	0
399213	Power Generation Plant Operator	Certificate IV in Wind Power Generation	0
342211	Electrical Linesworker	Certificate III in ESI - Transmission Overhead	6
342200	Electrical Distribution Trades Workers	Certificate III in ESI - Distribution Overhead	258
342211	Electrical Linesworker	Certificate III in ESI - Rail Traction	17
342200	Electrical Distribution Trades Workers	Certificate III in ESI - Distribution Underground	49
342211	Electrical Linesworker	Certificate III in ESI - Very Remote Community Utilities	0
312312	Electrical Engineering Technician	Certificate IV in ESI - Network Systems	0
342211	Electrical Linesworker	Certificate IV in ESI - Substations	0
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