Clean Energy Capacity Study:

Submission from the Maritime Union of Australia

12 May 2023

Jobs and Skills Australia

Submitted via: CleanEnergyWorkforce@jobsandskills.gov.au

Background

This submission has been prepared by the Maritime Union of Australia (MUA).

The MUA represents approximately 14,000 workers in the shipping, offshore oil and gas, stevedoring, port services and commercial diving sectors of the Australian maritime industry.

This includes coal export terminals and port and shipping services to many emissions-intensive industries, such as aluminium smelters and steel manufacturing facilities. The MUA is also part of the Offshore Alliance (with the Australian Workers' Union) which represents workers on offshore oil and gas facilities.

The MUA is a Division of the 120,000-member Construction, Forestry, Maritime, Mining and Energy Union and an affiliate of the 20-million-member International Transport Workers' Federation (ITF). The MUA is a member of the ITF's Offshore Wind Task Force which coordinates the work of unions representing workers in offshore wind globally.

The MUA is represented on the board of Industry Skills Australia, and on the Maritime Industry Skills Council and the Transport and Logistics Industry Skills Council (for stevedoring aspects).

Summary

We welcome this initiative of Jobs and Skills Australia. Workforce planning is a critical aspect of delivering an energy transition and ensuring that it is a just transition.

In our submission below, we outline the substantial maritime components of the clean energy workforce which will need to be included in this planning. Right now, stevedoring workers around Australia are handling huge and delicate wind turbine components with ship's cranes, but withouta High Risk Work Licence and with inadequate and poorly implemented VET qualifications for this work. This needs to be urgently addressed, with proper resourcing to address the renewable energy skills included in the Crane Licencing Review already underway through Safe Work Australia.

The development of offshore renewable energy will result in a huge need for seafarers with the appropriate Navigation Act qualifications, and there is already a skills shortage in this area, and with seafarers internationally. Significant efforts will need to go into improving the training and qualifications system for seafarers, and delivering appropriate Navigation Act/STCW[1] -compliant training in all states where there is currently no registered training organisation (RTO) delivering it, particularly Victoria, where offshore renewable energy construction will begin.

[1] Qualifications under the *Navigation Act 2012* are for seafarers working on large vessels capable of working offshore, and are aligned with the International Maritime Organisation (IMO) International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978. Qualifications under the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* (National Law) are not appropriate for the offshore renewable energy work.

Ships globally and in Australia will also be shifting to decarbonised shipping fuels, such as hydrogen, ammonia and methanol. Seafarer qualifications will need to be updated to address all aspects of safe storage, transport and handling of these materials. Similar training updates will need to occur for workers in port terminals loading these materials.

Offshore renewable energy will also require vessel-mounted cranes with a capacity over 3,000 tonnes. The current crane licencing system does not cover cranes of this capacity. In addition there is a danger that renewable energy developers will rely on a series of international corporate micro-credentials that are not properly integrated into the Australian qualifications framework.

Ultimately, we need a proper planning process to identify the scale of offshore renewable energy development in Australia in order to fully understand the size of the workforce we will need.

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Definitions and Terminology

Is the conceptual definition of the clean energy workforce ambiguous? If so, how could it be more clearly defined?

It appears to us that the study is seeking to define three separate aspects of the clean energy workforce:

1. The size of the workforce required
2. The skills of the workforce
3. Identify any new clean energy skills

The skills of the maritime workforce will in large part be existing skills that workers have, adapted to be used in a new context. This will involve some new skills, but largely draw on established skills (although aspects of training and qualifications do need to be updated). Changes in geography of energy supply and use, and the need to deliver a just transition, will mean that existing skills training will need to be delivered in new locations.

The discussion paper has a strong focus on point 3 – the identification of new skills. What must be included in this process is that workers with established and existing skills are just as important to the delivery of clean energy projects as those with new skills, and must be identified and included as part of this process.

For example, there is a national shortage of seafarers with the appropriate Navigation Act qualifications, along with an enormous national and international construction pipeline for offshore wind projects. The seafaring skills and qualifications involved in working on vessels constructing offshore wind projects are almost identical to those required on vessels constructing offshore oil and gas projects, as well as many other vessels, so seafaring is not a skill specific to clean energy. However if the shortage of seafarers is not addressed through an acceleration of training to increase the supply of qualified seafarers, it will be impossible to deliver these projects.

As a result, we propose the following amendments to the proposed definition in the discussion paper:

> The clean energy workforce includes the workers involved in developing, generating, storing, transmitting and distributing energy generated from renewable, net-zero emissions sources ('clean energy supply'), and installing and maintaining the technology that uses clean energy rather than fossil fuels ('clean energy use'). This spans energy needed for ~~electricity consumed by~~ businesses and housing, transport and industrial processes.
>
> When considering the clean energy workforce, all workers contributing to that activity will be in scope. ~~For some components of the study (e.g. examining the~~

~~barriers and enablers of the education and training pipeline), the scope will be restricted to those workers who require skills specific to adopting, developing, generating, distributing and supplying energy generated from renewable sources. For example, this would mean considering the skills required by wind turbine technicians, but not the accountant who works for a renewable energy business.~~

The first amendment is simply technical, because clean energy is not just electricity, it also includes renewable liquid fuels.

Below we outline the maritime skills involved in clean energy supply and use, onshore and offshore.

Clean energy supply: Maritime roles in onshore clean energy

MUA members who are wharfies, or stevedoring workers, currently handle components for onshore renewable energy in ports. This involves bulk and general stevedoring workers handling large and delicate components for wind turbines, such as blades, towers and nacelles. Solar panels are transported in containers, which may go through specialised container terminals in the capital cities, or bulk and general terminals in smaller ports.

However, there is currently no licencing or VET training for the crane skills currently used for handling onshore renewable energy components in ports, including ships' crane, mobile harbour cranes, and dual lifting (Figure 1). Crane licencing is currently being reviewed by Safe Work Australia, which provides a route to developing licencing and training in these areas.[2] Developing new High Risk Work Licences for ships' cranes, mobile harbour cranes and dual lifting and ensuring that this material is integrated into existing qualifications or becomes a recognised skill set is important to secure the skills currently needed to build onshore wind projects.

[2] SWA, Crane Licencing Review, Accessed Feb 2023.

Figure 1: Stevedoring workers in Geelong perform a dual lift of a 100 tonne wind turbine blade using two ship's cranes. The blades were transported to onshore wind projects in western Victoria.

Credit: David Ball

As the volume of construction for onshore renewable energy increases, some ports may set up specialised terminals or areas of the port dedicated to handling these components, and a dedicated workforce due to the level of skills involved.

At present, most of these renewable energy components are imported on ships with international crew. However, as more domestic manufacturing facilities are set up, components may be carried between ports by ship, as the size of the components makes them difficult to transport by road (often involves road closures and night transport). Increased domestic shipping would involve Australian seafarers, with STCW-aligned qualifications.

We ask Jobs and Skills Australia to coordinate with the Jobs and Skills Council (JSC) for maritime, Industry Skills Australia (ISA) and Safe Work Australia to ensure sufficient resources are in place to rapidly develop licencing and training for ship's cranes, mobile harbour cranes, and dual crane lifting, all of which are required for handling onshore wind turbine energy components.

Clean energy supply: Offshore renewable energy

A substantial pipeline of offshore renewable energy is being developed, initially off Gippsland, Victoria and Newcastle, NSW, and later off Western Victoria, Tasmania, and southern WA.[3] Credible

[3] DCCEEW, Establishing offshore renewable energy infrastructure, accessed May 2023.

estimates are of 10-14 GW being built in the Bass Strait region (Gippsland, Portland and Tasmania), and another 9-12 GW in NSW,[4] in addition to West Australian projects. The Victorian government has set an offshore wind target of 9 GW by 2040, which it will be supporting financially,[5] and NSW is likely to issue an offshore wind strategy soon.[6]

For offshore wind construction, MUA members will work as maritime crew and other skilled crew on board multiple types of vessels installing offshore wind turbines, including wind turbine installation vessels, cable lay vessels, scour protection install vessels, heavy lift vessels, and vessels transporting components. See Figure 2.

Large staging and assembly ports will be needed to construct offshore wind terminals, with the first one likely to be the Victorian Renewable Energy Terminal in Hastings, Victoria,[7] and another Windfarm Project Cargo Precinct in Geelong.[8] Similar terminals will be constructed in Newcastle, Port Kembla[9] and in West Australia. MUA members will work as stevedoring workers in these terminals, discharging, loading and managing components in the terminal. The model for these ports is the port of Esbjerg, Denmark, which is by far the largest renewable energy port in the world (Figure 3). It has been used as a base to build the majority of the offshore wind infrastructure in Europe. It also handles an enormous quantity of onshore renewable energy components. The port is publicly owned with common user facilities, and a workforce employed directly by the port authority, and allocated to the needs of renewable energy developers and projects on a daily basis.

NSW offshore wind will involve floating turbines which will be assembled in port and towed out to sea, so there will be more assembly work in the port.

Once offshore wind farms are operating, MUA members will work as maritime crew and other skilled workers based on Service Operations Vessels travelling from turbine to turbine to carry out maintenance and inspections on the turbines, as well as in the port terminals servicing the offshore wind turbines.

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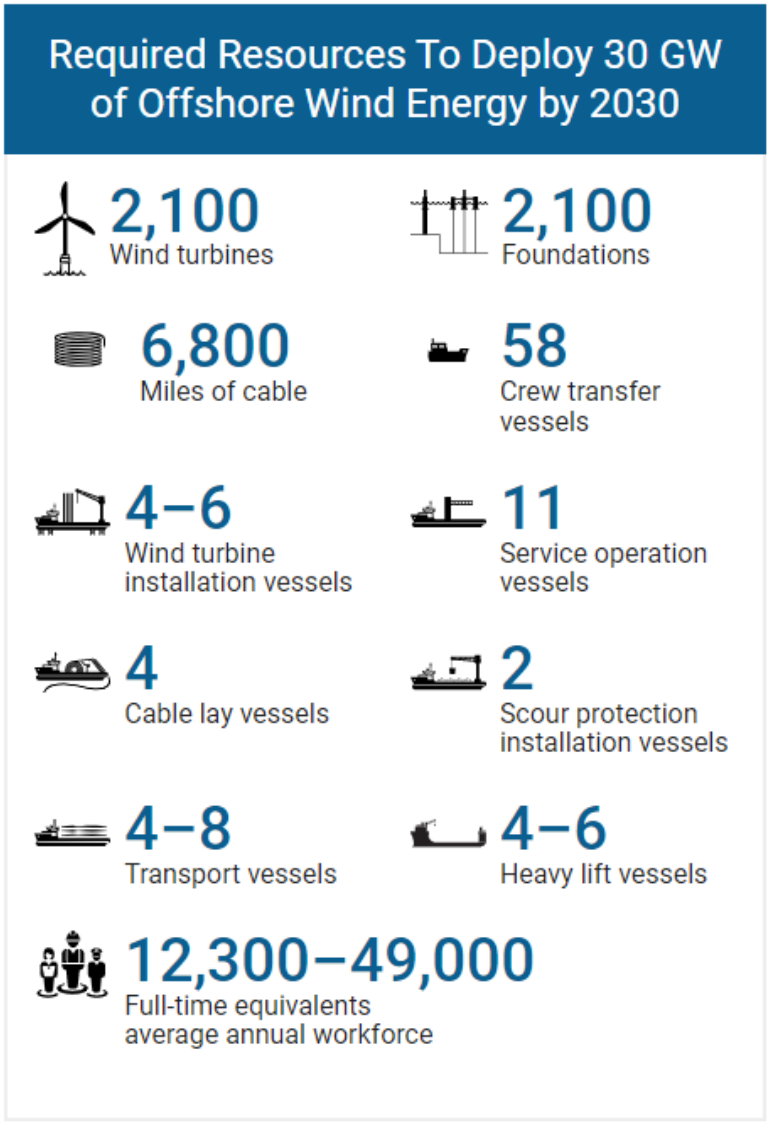
[4] CoreMarine, Immense Potential: The opportunity for Australian Ports, April 2023.
[5] Victorian Department of Energy, Environment and Climate Action, Offshore wind Energy, accessed February 2023.
[6] Colin Packham, NSW mulls offshore wind targets for the state, buoyed by advice, 3 March 2023, AFR.
[7] Victorian Department of Energy, Environment and Climate Action, Offshore Wind Implementation Statement 2, accessed May 2023.
[8] Geelong Port, Projects and Development, accessed May 2023.
[9] NSW Ports, Port Kembla lays foundation for offshore wind industry, 27 February 2023.

Figure 2: Workforce, resources and supply chain needs to build 30 GW of offshore wind in the USA.



Source: NREL, A Supply Chain Road Map for Offshore Wind Energy in the United States, January 2023.

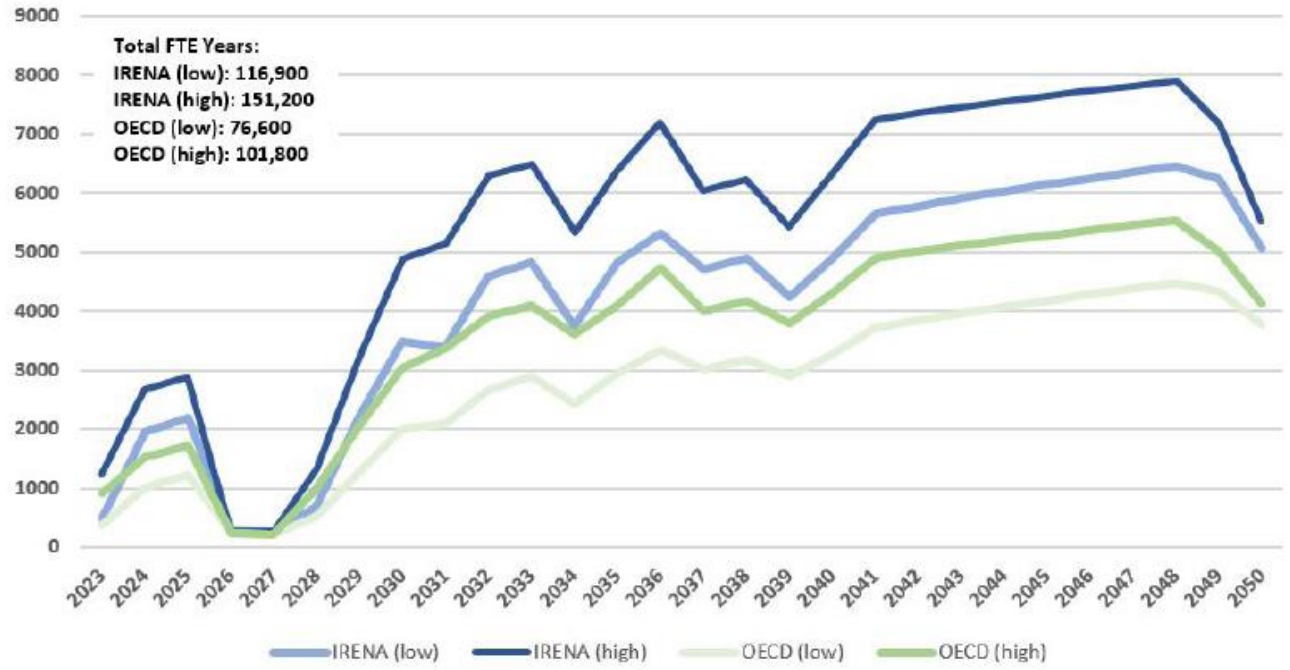
Figure 3: Part of the Port of Esbjerg, Denmark, which handles vast quantities of components for onshore and offshore renewable energy. There are multiple wind turbine component manufacturing and assembly facilities in the surrounding area.

How much employment will there be in offshore wind?

Employment calculations based on a 27 GW pipeline largely driven by demand for offshore wind to generate renewable hydrogen estimated between 76,600 and 151,200 FTE job-years in Australia, with 3,000-8,000 workers per year through the 2030s, depending on the level of local content (Figure 4).[10] This is likely a conservative estimate as it was made during the tenure of the previous government, which had not yet declared any offshore renewable energy zones, or made any effort to secure domestic renewable manufacturing.

[10] Briggs, C., M. Hemer, P. Howard, R. Langdon, P. Marsh, S. Teske and D. Carrascosa (2021). *Offshore Wind Energy in Australia, P3.20.007 – Final Project Report*. Hobart, TAS: Blue Economy Cooperative Research Centre, p.72.

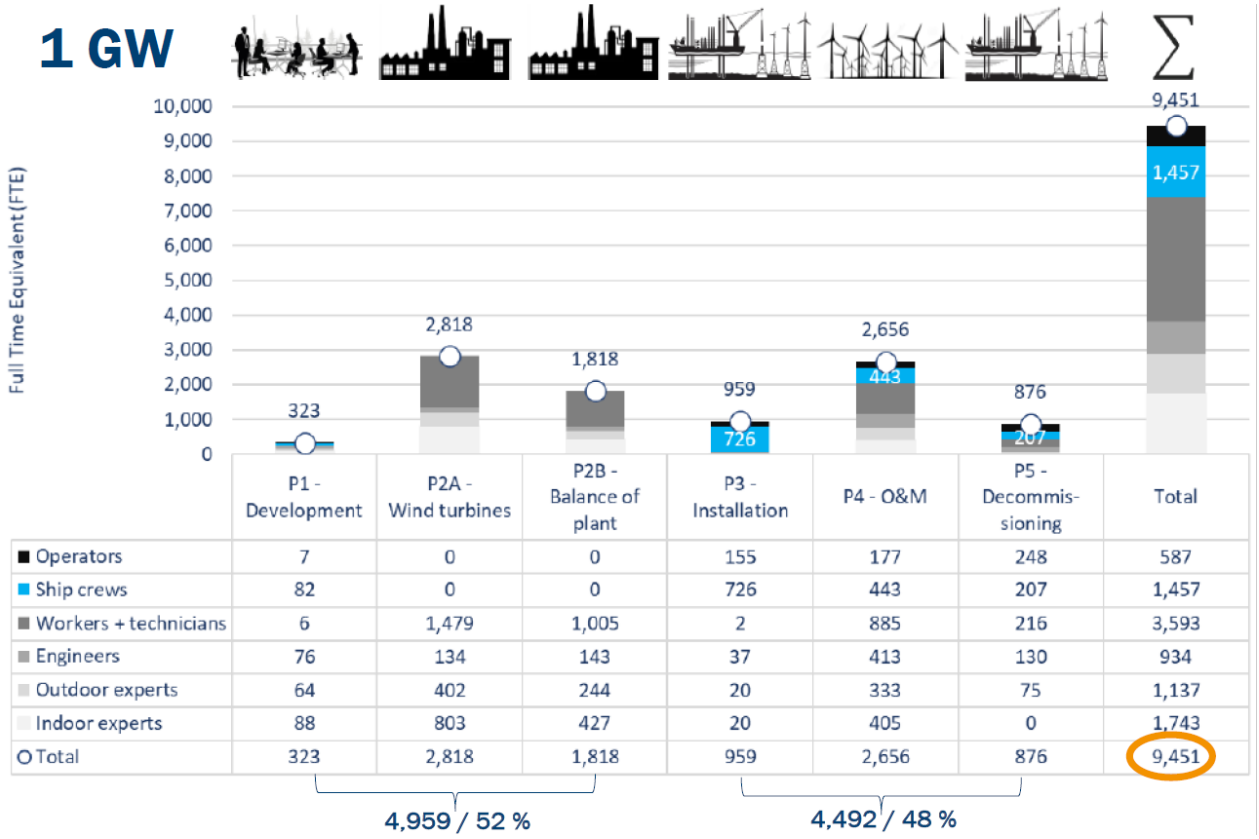
Figure 4: Estimated offshore wind employment in Australia with a 27 GW pipeline driven partly by demand for renewable hydrogen, with a low (10%) and high (25%) level of local manufacturing.



Source: Briggs, C., M. Hemer, P. Howard, R. Langdon, P. Marsh, S. Teske and D. Carrascosa (2021). *Offshore Wind Energy in Australia, P3.20.007 – Final Project Report*. Hobart, TAS: Blue Economy Cooperative Research Centre, p.72.

The distribution of offshore wind jobs for a 1 GW Danish offshore wind project is illustrated in Figure 5. This is based on the Danish model of a high level of planning, social dialogue, quality jobs and high levels of skills.

Figure 5: Estimated number of jobs arising from a Danish 1 GW offshore wind project.



	P1 - Development	P2A - Wind turbines	P2B - Balance of plant	P3 - Installation	P4 - O&M	P5 - Decommis-sioning	Total
Operators	7	0	0	155	177	248	587
Ship crews	82	0	0	726	443	207	1,457
Workers + technicians	6	1,479	1,005	2	885	216	3,593
Engineers	76	134	143	37	413	130	934
Outdoor experts	64	402	244	20	333	75	1,137
Indoor experts	88	803	427	20	405	0	1,743
Total	323	2,818	1,818	959	2,656	876	9,451

Source: Port of Esbjerg presentation, sourced from QBIS, Socio economic impact study of offshore wind, 2020, p.29.

Clean energy use: Ships and ports

Shipping emissions will need to be addressed as part of the decarbonisation of the Australian and global economy. Shipping is an important aspect of many of the emissions-intensive industries which are included in the Safeguard Mechanism, such as steelworks (with ships carrying iron ore, coal, scrap steel, and steel products), alumina refineries (with ships carrying bauxite), aluminium smelters (ships carrying alumina and aluminium products), LNG facilities (ships carrying LNG), and many other industrial facilities. There are also some ships directly included in the Safeguard Mechanism due to their emissions, including the Toll and TTLine vessels that connect Tasmania to mainland Australia, and the Rio Tinto Marine vessels that carry bauxite from the NT and north Queensland to alumina refineries in Gladstone.

It is encouraging that in the 2023 Federal budget, funding was allocated for a Maritime Emissions Reduction National Plan to facilitate the energy transition for the domestic maritime sector. This sector-specific plan is likely to be part of the longer term Transport and Infrastructure Net Zero Roadmap and Action Plan.

Smaller vessels such as ferries may be electrified, but larger vessels will need to use liquid fuels such as hydrogen, ammonia or biofuels. An important reference on the workforce and skills aspects of this process is the Maritime Just Transition Task Force,[11] who in November 2022 released a document on Mapping a Just Transition for Seafarers. Seafarer qualifications and training will need to be updated to incorporate safe handling of new fuels and maintenance of engines using them.

The development of new clean energy fuels will also involve the development of landside facilities and port terminals to load fuels onto vessels for export, or to bunker ships using these fuels. Workers at port export terminals and bunkering facilities will also need to trained on safe handling of new fuels and operation of these facilities.

ANZSCO Classifications and the clean energy workforce

Above we have identified the substantial number of existing maritime roles which are or which will become essential parts of the clean energy workforce.

However a further problem is that the current ANZSCO classification structure does not adequately reflect maritime occupations, either in ship operations orstevedoring work. We have made preliminary representations to the Australian Bureau of Statistics (ABS) on those deficiencies.

The key deficiency we have identified is that ANZSCO seems to have overlooked a critical sub-cohort of seafarer occupations – 'Ratings' occupations, which are generally VET Certificate Level III and Level IV occupations (note that there are three occupational streams on ships – Deck officers e.g. ship's masters, Engineering officers, and Ratings). The Australian 'Integrated Rating' (a VET Certificate Level III occupation) is the core Rating qualification in Australia, certainly on ships required to comply with the IMO STCW Convention, given effect through Marine Orders issued by the Australian Maritime Safety Authority (AMSA) under the *Navigation Act 2012*. A Rating is the generic name given to a cohort of seafarers engaged on (i) larger ships, principally ocean going trading ships, cruise passenger ships, many offshore oil and gas support ships, some towage and dredging ships etc (These are a key qualification on the types of vessels which will be constructing and maintaining offshore wind turbines, given their work location in rough waters 10-40km offshore); and (ii) and the General Purpose Hand (GPH) on smaller ships such as ferries, small trading ships etc.

ANZSCO captures 'Marine Transport Professionals' (which includes Master Fisher, Ship's Engineer, Ship's Master, Ship's Officer, Marine Surveyor and Marine Transport Professionals nec – typically higher education qualifications at diploma, advanced diploma, associate degree and bachelor degree level); and also includes Deck and Fishing Hands as a subcategory of 'Labourer'.

[11] Made up of the International Transport Workers' Federation, the International Chamber of Shipping and the UN Global Compact.

ANZSCO does not capture the higher qualified Ratings occupations, such as Integrated Rating, an Australian Rating, or Able seafarer—deck rating and Able seafarer—engine rating, both international Ratings. These are specified in Marine Order 73 made under the Navigation Act.

Additionally, the ANZSCO occupation 'Deck Hand' is no longer a recognised occupation in the Maritime Training Package or under AMSA Marine Orders. It has been replaced by General Purpose Hand (GPH) Near Coastal (NC), a VET Certificate Level I occupation.

We have advised ABS that would like to see the next iteration of ANZSCO adopt appropriate nomenclature for the Rating category of seafarer. This will be important in the VET space for data collection, analysis and reporting. It will also be important for alignment with the occupations for which qualifications will be included in an updated Maritime Training Package that will arise from the Government's Qualifications Reform process. It is the MUAs intention to make a submission on the nomenclature for Ratings categories of worker in water transport when water transport is scheduled for consideration in the ABS tranche 3 industry consultation process later in 2023, for use in the next iteration of ANZSCO, and also to propose that GPH occupation not be included in the Labourer classification but as a sub component of water transport.

In relation to port workers or stevedoring workers the MUA notes that these are included in 891113 Waterside Worker (Stevedore, Wharf Labourer) with the descriptor "*Transfers cargo between ships and other forms of transport or storage facilities*" and is designated as Skill Level 5. ANZSCO 891113 falls under Major Subgroup 8 Labourers, Major Sub Group 89 Other Labourers. We do not believe these occupations are best defined as 'Labourer' and Skill Level 5 is clearly incorrect, as the Transport and Logistics Training Package includes AQF Qualifications at Level II, III and IV for stevedoring. They should be designated as Level 3 and or Level 4 skills. We are conferring further with ABS on these occupations as well and have proposed that they be in future grouped under a 'Transport and Logistics Group' or 'Supply Chain Group' in an updated ANZSCO.

New skills and qualifications: Crane licencing and training for renewable energy

A serious skills gap has arisen within the Australian crane licencing system (High Risk Work Licences under the WHS Act), where the ships' cranes used to discharge renewable energy components require no specific training or licence to operate at all. Similarly, there is no licence that covers the Mobile Harbour Cranes also used extensively to handle renewable energy components. There is also no existing licence to cover the very large ship's crane (over 1,000 tonnes) that are used to erect offshore wind turbines at sea, and to load components in port.

It is a very positive development that Safe Work Australia is currently reviewing crane licencing, and appears to be recommending new licences for onshore and offshore ships' crane, mobile harbour cranes, and an advanced training module on dual lifting.[12] This licencing is a critical part of delivering energy transition projects and skills, and must be supported and expedited by other areas of government.

[12] SWA, Crane Licencing Review, Accessed Feb 2023.

Cranes installed on vessels are significantly higher risk than those on shore. They are constantly exposed to salt water and are usually installed on Flag of Convenience ships travelling internationally. Australian law requires stevedoring workers to operate ships' cranes for loading and discharge (Navigation Act s94), in order to prevent fatigue among ship's crew and protect stevedoring work. Australian stevedoring workers regularly board these vessels for the first time when they prepare to operate the crane, yet cannot be confident about the crane's maintenance history or current status. Therefore a very thorough inspection of each crane is required before operation.

Crane operators must also deal with the listing of the ship during the lift. Dual crane lifting using ship's cranes also takes place regularly (Figure 1).

Employers commonly use the excuse that there is no 'ships crane license' as an excuse to not train an employee for any High Risk crane license before requiring them to operate the ships crane – not even a comparable slewing mobile crane licence. Workers often receive only a simple crane induction before starting to operate a ship's crane. Not only is this a risk to workers, it is also a risk to the high-value cargo they shift – particularly wind turbine blades.

There are no wind turbine blade manufacturers in Australia, and very limited tower manufacturing. This means that virtually all components of large wind turbines are imported to Australia on ships. Rotor blades can be in excess of 100 tonnes in weight and require complex dual lifting. There is zero tolerance for damage to a wind turbine blade, and no facility in Australia to manufacture or carry out significant repairs to blades.

How would it work?

Four units of competency on the operation of ship's cranes were developed to be included in the Transport and Logistics Training Package – 'TLISS00177 Stevedoring Ship Mounted Crane Operations Skill Set'. However stevedoring employers' have been reluctant to recognise and adopt this training package and this skill set. The new High Risk Work Licence could draw on these units of competency.

Our proposal is that the Ship's Crane licence would be based on the current HRW licence for 'Slewing Mobile Crane – with a capacity over 100 tonnes'. Additional units of competency would need to be added to cover:

- the stability of vessel during the lift.
- the additional safety and maintenance issues involved with operating a crane located on an international-flag seagoing vessel.
- dual crane lifting.

New skills and qualifications: Maritime heavy lift offshore cranes

While ship's cranes have been used on Australian wharves for a very long time, there is a growing number of complex heavy lifting requirements, partly based on the development of renewable energy in Australia.

A new High Risk Work Licence should also be developed for Offshore Cranes. The installation of offshore renewable energy will involve cranes with a capacity over 3,500 tonnes, and a 45m reach, installed on vessels that will load offshore wind turbine components in an Australian port, and then take them out to the project site 10-40km off the coast of Australia to assemble the components at sea. The first projects will be constructed off the coast of Gippsland, Victoria where the government has declared the first Australian Offshore Electricity Area,

The operation of these very large cranes is a critical safety issue for the offshore renewable energy industry. The only offshore wind fatality we are aware of was a crane incident on *Pacific Osprey*, a Cyprus flag offshore wind construction vessel run by Swire. The Flag of Convenience vessel did not have specific training in place for crane operators. While in port in Amsterdam the crane smashed into the ship's bridge and injured a number of crew on the bridge.[13] One of these seafarers later died from these injuries, but this death is not recorded by company-run global offshore wind safety body GPlus.

Similar work is presently undertaken in the offshore oil and gas industry, where workers are required to hold a Stage 3 British Standards 7121 crane licence. To obtain this licence, first they must have a HRW Tower Crane licence, plus a Dogging HRW licence, plus at least 20 hours supervised crane operations, or whatever is required to bring the operator up to standard. The operator then undergoes a practical and written examination offshore with an accredited assessor. The Stage 3 British Standards 7121 crane licence is presently delivered through Sparrows, Enermech ATC and Perth Sim.

There is growing potential for a skills shortage of offshore crane operators, and a need to develop an Australian package of competencies for incorporation in an existing seafarer qualification or as an associated skill set specifically suited to the changing nature of local work and industry. Crane tonnage has increased, and cranes now have advanced PLC's (operating systems) which allows the cranes to switch to various modes, including Active Heave Compensation (AHC) and Constant Tension (CT).

The type of lifts carried out by offshore oil and gas cranes has become more complex, including lifting intricate spools and well jumpers from barges and heavy structures weighing over 500 tonnes, along with flexible flow lines and umbilicals from deck to over Vertical Lay System towers.

Historically, cranes on vessels were used for more simple operations such as vessel-to-vessel transfers and to move equipment around the deck. Large construction tasks were carried out from fixed barges, and not from vessels.

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[13] Crane accident injures Swire Crew, 26 Aug 2018.

There is precedent for this licence in the Offshore Endorsement previously issued through the WA WHS department, with the Tower Crane and Derrick Crane HRW licences as a prerequisite.

How would it work?

We propose that an Offshore Crane High Risk Work Licence be created as follows:

Scope: for the operation of all project cranes on offshore construction vessels and platforms, including offshore renewable energy projects and offshore oil and gas projects.

Prerequisites: Tower Crane HRW Licence, Dogging HRW licence, plus at least 20 hours supervised crane operations (or whatever is needs to gain the necessary skills).

The units of competency could also be drawn from the Stage 3 British Standards 7121 crane licence, as well as the unit of competency PMASUP305 – Operate Offshore cranes. All units would likely need to be updated in light of the ongoing developments in crane scale, technology and tasks. This work includes:

- Permit to work and safety systems, hazard mitigation and management, toolbox meetings, planning and procedures on lifting and operations.
- Operating cranes with advanced PLC's (operating systems) which allows the cranes to switch to various modes, including Active Heave Compensation (AHC) and Constant Tension (CT).
- Lifting intricate spools and well jumpers from barges
- Lifting heavy structures weighing over 500 tonnes,
- Lifting flexible flow lines and umbilicals from deck to over Vertical Lay System towers.
- Loading very large offshore wind components on to vessels, and installation of these turbines at sea.
- Managing static electricity during lifting operations for offshore wind turbines.

To receive a licence, after finishing the course and supervised crane operations, the worker would need to complete practical and written examination by an accredited assessor offshore on board the vessel. Once issued the licence must be re-validated every 2 years along with proof of your hours and log book.

Other clean energy skills

There are a number of international qualifications which employers are seeking to use in the offshore wind industry in Australia.[14] Most of these are developed by international organisations of employers. Unions have no opportunity to provide input, and the Australian government has no ability to ensure they are aligned with existing skills and training programs and needs.

Jobs and Skills Australia and the relevant skills councils should examine those international 'qualifications' to ensure that global best practice standards are incorporated in all relevant

[14] Listed in the Star of the South, Offshore Wind Jobs Guide, accessed Feb 2023.

Australian qualifications and skill sets, that they are fully integrated within the current Australian skills system, and that courses are accessible and funded through TAFEs. It should not be left to private RTOs or individual companies to offer these courses or the Australian equivalents:

1. Global Wind Organisation (GWO) Basic Safety Training (BST) Offshore Certification
2. GWO Certified Blade Repair Training
3. Industrial Rope Access Trade Association (IRATA) Rope Access Certification
4. Crane Operator - Stage 3 British Standards 7121 (the Offshore Ships' Crane licence currently being discussed as part of the SWA Crane Licencing review would provide a domestic equivalent to this British qualification).
5. Oil and Gas UK (OGUK) fitness and medical
6. National Association of Corrosion Engineers (NACE) Coating Inspector Program
7. Lifting Equipment Engineers Association (LEEA) Lifting Equipment General (LEG) training

Barriers to developing appropriate Training Packages for the maritime workforce

Some of the main structural issues we observe in relation to both the Maritime Training Package and Transport and Logistics Training Package development and delivery are listed below. These obstacles will have to be overcome in order to be able to properly update qualifications and training to reflect new clean energy aspects of maritime roles:

- There are quite a number of Ratings occupations or job classifications as described in enterprise bargaining agreements (EBAs) and safety net Awards for which there is no recognised VET qualification or skill set.
- In the seafaring occupations, there is no consistent methodological approach or rational hierarchy in the way that qualifications for International Maritime Organisation (IMO) International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978, as amended, (STCW) occupations (regulated by the *Navigation Act 2012*/Marine Orders made by the Australian Maritime Safety Authority [AMSA]) and non STCW occupations (regulated by the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012*/Marine Orders) relate or interact:
  - The packaging of Units of Competency that form the core qualifications at Certificate I, II, III and IV is no longer fully appropriate - there is a lack of consistency in packaging rules for qualifications and skill sets.
- The content (expressed in Units of Competency) in qualifications/skill sets have not kept pace with technological change and the requirements of the job (job functions) nor are they fit for purpose for the future of work in maritime roles across all emerging industries utilising maritime skills, including clean energy industries.
- In seafaring occupations there is an overweight emphasis on STCW Convention requirements relative to overall job requirements in the Units of Competency in qualifications (STCW really being about competencies for safety performance, not overall job roles and overall competencies), resulting in a relative deskilling of the Ratings occupations (as we noted earlier occupations on ships can be disaggregated to three categories: (i) Deck officers (ship navigation and overall ship operations); (ii) Engineer

officers (propulsion and other on-board systems operations); and Ratings (cargo operations and ship maintenance [but including deck and engine watchkeeping to support deck and engineer officers]).

- There is a lack of clear pathways (career options) for maritime occupations into higher level jobs within a particular sector or into other sectors e.g. onboard seafaring to shore based roles requiring seafaring skills, stevedoring to logistics (e.g. sea ports to inland ports [intermodal terminals]), offshore oil and gas to offshore wind etc.
- There is a lack of integration of licencing of high risk roles (mainly in craneage in both seafaring and stevedoring) into training package structures as outlined in detail in the preceding sections of this submission.
- The dual regulatory arrangements in place for shipping, where not only the VET regulator i.e. ASQA (and states) has a role, but also AMSA as the maritime safety regulator with responsibility for laws that give effect to the STCW Convention in Australia, and which intervenes in approval of qualifications content, course delivery, and assessment (e.g. it manages the sea service task books for on the job assessment and supervises oral examination as part of the occupational licence issuing process) and RTO approval.
- The poor regulatory oversight that has permitted RTOs to commence enrolment in a qualification or skill set derived from the Maritime Training Package (and in some cases issuing of a VET qualification on completion where no sea time has been undertaken) when Trainees have no sponsor who guarantees provision of a berth on a ship to complete sea time, resulting in poor completion rates and loss of the trainee's investment in their self-funded training.
- The inadequacy of taxonomy for seafaring occupations (as mentioned earlier), reflected in gaps in the Australian and New Zealand Standard Classification of Occupations (ANZSCO) managed by ABS, resulting in poor data on shipping sector training performance that identifies qualifications completion and commencements and poor allocation of funding for VET courses for training and lack of recognition maritime occupations in Government programs such as for Apprenticeships and Traineeships e.g. wage subsidies for employers – and where reform we are discussing with ABS will also need to be reflected in the Australian Skills Classification.
- The dual system of maritime safety regulation in Australia. One set of regulations is for what might be broadly described as larger ships which operate in the EEZ or internationally, which fall under *Navigation Act 2012* regulation and which are described as regulated Australian vessels (RAVs) and another set of regulations for what might be generally described as smaller ships such as ferries, towage, pilotage and mooring ships, intrastate coastal trading ships, fishing and aquaculture ships, some offshore oil and gas support ships etc, which are regulated by the *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* and are known as domestic commercial vessels (DCVs), but where there is significant overlap not based on any clear delineation rules. The result is that:
  - The span of qualifications and skill sets has to date been too heavily driven by the artificial and unbalanced delineation between the Navigation Act/RAV/STCW jurisdiction and the National Law/DCV/non-STCW jurisdiction and is too influenced by regulator arrangements and not occupational roles and job functions, occupational competencies and skills for the future; and

  - The dual safety regulatory system has influenced the structure and content of qualifications and skill sets in the Maritime Training Package which has resulted in a less than optimal qualifications structure, with gaps in content, occupational coverage and the way training is delivered. It also results in an inability for RTOs to adopt credit transfer practices as there is a lack of consistency in the Units of Competency in the STCW and non-STCW qualifications for essentially identical tasks.
- Certain seafaring occupations are not included on the Australian Apprenticeships Priority List (partly is seems due to the taxonomy issues in the ANZSCO).
- Some of the specific deficiencies we identify on the in the current VET model as far as the stevedoring sector is concerned are:
  - There are a number of stevedoring occupations or job classifications as described in EBAs and safety net Awards for which there is no recognised qualification or skill set;
  - There is a poor outcome in terms of stevedoring workers achieving a recognised stevedoring qualification; and
  - There is no consistent training provision by recognised training providers (RTOs):
    - These factors were identified by the Productivity Commission in its report on its inquiry into the long-term productivity of Australia's maritime logistics system entitled *Lifting productivity at Australia's container ports: between water, wharf and warehouse* of 21 December 2022 and released on 9 January 2023. It found that:
      - ✓ Stevedoring terminals rely more on onsite unaccredited and informal training in developing their workforce;
      - ✓ A lack of formal qualifications could be a barrier to labour mobility between terminal operators if prior experience is not recognised at another company or port;
      - ✓ Insufficient recognition of past skill acquisition; and
      - ✓ The absence of requirements for some terminal operator equipment seems at odds with practice in other industries (a reference to the craneage issues which we address in this submission):
        - The Productivity Commission noted that training is critical to ensuring workers can work safely and productively in their roles and that there is an adequate supply of labour with the right skills available for employment within a sector.
        - It also noted that the transport, postal and warehousing industry — which includes the maritime logistics sector — has low employer engagement relative to other industries (according to research by the National Centre for Vocational Education Research [NCVER]).
- Poor industry knowledge of Commonwealth and State subsidies and support programs for Trainees.
- Inadequacy in advocacy for seafarer occupations. For example, key STCW qualifications are not listed on the Australian Apprenticeships Priority List (of 1 January 2023), meaning those occupations are not technically eligible for the Australian Apprenticeships Incentive System (which also covers Traineeships), including the wage subsidy for employers.
- For seafaring occupations, the lack of training provider sites to deliver STCW qualifications/skill sets in relatively close proximity to where trainees are located, which could be exacerbated by the regional nature of many clean energy industry workplaces. While the relatively modest numbers of seafarers that are required to meet even the most

optimistic forecasts for seafarer demand does not warrant a plethora of such RTOs approved to deliver STCW qualifications (there are only two currently delivering such training – the Australian Maritime College at Launceston, and the South Metropolitan TAFE at Fremantle – though two others are moving to obtain scope – Newcastle TAFE in NSW and the Great Barrier Reef International Marine College in Cairns). We strongly believe four approved RTOs is sufficient for the long term, but we want to ensure that those four RTOs collaborate with other potential TAFE delivery sites to ensure there are regional delivery sites using existing TAFE facilities in SA, Victoria, Darwin and WA north west to deliver STCW qualifications.

- Similarity, in response to the Productivity Commission findings in relation to the lack of formal and structured training delivery, we are advocating for a number of RTOs in close proximity to stevedoring workplaces to gear up for delivery of stevedoring qualifications.

Barriers to recruiting and training priority social cohorts

It is encouraging to see JSA have a focus on recruiting priority social cohorts, including women, First Nations, and culturally and linguistically diverse people. The MUA strongly supports this approach. Many maritime workplaces are 95% male, with more women in workplaces with more certainty in the allocation of work and less time required away from home. Barriers in our industry include:

- The extreme level of flexibility required of stevedoring workers, which offers more flexibility to employers in allocating labour than any other industry. Not having a clear roster or knowing when they expect to work makes it very hard for workers to be able to commit to household care work.
- Discrimination in hiring practices by employers, who historically required workers to pass physical tests that did not correspond to the actual job requirements. The MUA has consistently opposed the use of these tests.
- Male-dominated management, who tend to encourage and reward male-dominated workplace culture.
- Racism and discrimination, often led by management.
- Lack of on-site facilities for women.
- For seafarers, the requirement to be away from home for months or weeks at a time, which creates significant challenges for household care work.
- Poor employer recruitment practices.
- Inadequate pathways and support for First Nations to enter and be retained in seafaring and stevedoring worker occupations.

To give one example of how entrenched the problem is in the industry, Qube is an ASX listed transport and logistics company seeking to provide end-to-end logistics solutions for renewable energy through their new subsidiary Qube Renewables. They also operate bulk and general and container stevedoring terminals. Their reporting under the Gender Equality Act shows:

- 4% of their machinery operators and drivers are female
- 7% of their laborers are female

- 4% of their technicians and tradespeople are female
- 9% of the management are female[15]
- Until 2017 Qube had no women on its board of directors[16]

The MUA is committed to supporting women into the stevedoring industry. We are in favour of enforceable targets for the employment of women, First Nations, and culturally and linguistically diverse people. In a few cases have been able to get these into Enterprise Agreements. The Union's Women's Officer and Indigenous Officer are part of the union's National Council. We have recently created Assistant National Secretary positions for Women and First Nations, and people are currently being elected into his role. We have active national and local Women's and First Nations and Aboriginal Torres Strait Islander Committees. We play a leadership role in the Women In Male-Dominated Industries and Occupations (WIMDOI) network, which provides national and local support networks for women in stevedoring and other industries. We have also played a leading role in advocating for the First Nations Voice to Parliament, through our current National Indigenous Officer, Thomas Mayo.

MUA union agreements seek to address many of the barriers outlined above as well as providing Domestic Violence leave, seeking to increase parental leave, supporting workers seeking flexibility (or in many cases greater certainty) to accommodate caring responsibilities. MUA agreements also provide more certainty in rostering, order of pick, and access to training, measures which reduce gender inequality and pay inequality, and racial discrimination. Agreements also include transparent and objective criteria for promotion and training which reduce discrimination against women and people from other groups underrepresented in the workforce. They contribute to increasing labour force participation by allowing women and other underrepresented groups to be promoted to roles with more stable rostering arrangements.

Barriers to accessing training

We have outlined above how seafarers and stevedoring workers are or will become essential parts of the clean energy workforce. Some of the main barriers to maintenance of training supply and pathway opportunities in the maritime workforce are:

- In seafaring the most critical barrier to trainee commencement and completion in a seafaring qualification is the lack of access to spare cabins (berths) on suitable ships for trainees and cadets to undertake the mandatory sea time (on-the-job) training necessary to achieve an STCW VET qualification and maritime regulator issued occupational certificate (licence) required to work on a ship.
- A related barrier is the reluctance to date for the industry to utilise a group training organisation (GTO) to coordinate that sea time which might require placement of a trainee

[15] Qube Holdings, 2022 Workplace Gender Equality Act Report, Appendix: Workplace Profile.
[16] Jenny Wiggins, Qube tees up Target for Moorebank freight hub as net profit falls 16 pc, *Australian Financial Review*, August 23 2017.

or cadet on more than one ship to acquire all the competencies needed to be assessed as competent.
- In stevedoring the main barrier is a commitment by employers to use the formal VET Training Package qualifications as the basis for achievement of competency and safe work and to provide careers paths for stevedoring workers.

Ensuring that training is geographically accessible is also important. Given the substantial number offshore wind projects to be developed in Victoria, it is essential that a location be identified in Victoria to deliver STCW-compliant maritime qualifications.

Workforce planning and the Integrated System Plan for electricity

One of the significant challenges in planning for a future offshore renewable energy workforce is the current significant discrepancy between the role of offshore wind in the 2022 AEMO Integrated System Plan (ISP), the role of offshore wind in state government planning (particularly in Victoria and NSW), other Commonwealth government actions, and the intentions of developers to build very large offshore wind projects. The result is that the 2022 ISP included a minimal future role for offshore wind, whereas it appears that Australia could be on track to build over 20GW of offshore wind.

We believe this discrepancy has arisen because the ISP has significantly underestimated the cost and obstacles to building very large onshore renewable energy zones, and not properly reflected the benefits of building offshore wind close to existing transmission and energy demand areas. It should be noted that the 2020 ISP did not include wind resources off the coast at all in its modelling of renewable energy zones.

We are hopeful that the 2024 ISP will address this discrepancy. So far the 2023 draft Inputs, Assumptions and Scenarios Report includes an offshore wind sensitivity to model higher levels of offshore wind construction, including the Victorian government's offshore wind targets, and has increased the number of potential offshore renewable energy zones.

International experiences: Denmark

Other union submissions will no doubt emphasis the important examples of the energy transition plans in Spain and Germany.

We would like to highlight the leadership role played by Denmark. Denmark are now global leaders in renewable energy. The country is already running on 60% renewable energy, with no nuclear power. They have legislated a target to reach 100% renewable energy by 2030 and net zero emissions by 2045, and are also phasing out oil and gas production and coal fired power stations.

We have been briefed by our Danish union counterparts on the measures that have ensured a just transition for the workforce in this process. Measures include:

- Union agreements are required for all work in Denmark, and any company operating in Denmark.
- There is tripartite decision making at all aspects of government, and at a company level.
- There is a very high level and a constant process of skills development, and ongoing free access to training and qualifications
- All required skills and qualifications are part of the national skills system, not the company-led add on referred to in the section 'Other clean energy skills'
- Unemployed workers receive 90% of their previous wage

Denmark is wealthier on a per capita basis than Australia, and more equal society, as measured by the GINI coefficient, with about 1/3 the levels of child poverty compared to Australia.

Denmark has approximately the same population as Sydney. Danish companies are now planning on building multiple multi-billion clean energy projects in Australia (eg. CIP, Orsted, and Copenhagen Energy). Vestas also plays a significant role as a wind turbine manufacturer and installer.

Denmark has a wealthy, innovative, egalitarian society that are global leaders in future technologies, built on union agreements, tripartite decisions making, and a highly skilled workforce.

How this study relates to other work

The diagram on pg.17 of the discussion paper showing other government processes is helpful. However, it is missing a significant stream of work under the *Offshore Electricity Infrastructure Act 2021* (Offshore Electricity Act). The Regulations on requirements for project licences issued under this Act include an assessment of offshore renewable energy projects' 'impact on, and contribution to, the Australian economy and local communities, including in relation to regional development, job creation, Australian industries and the use of Australian goods and services' (*Offshore Electricity Infrastructure Regulations 2022*, s.26(4)(a)). However, so far we are not aware of any workforce planning that has gone into this process.

At a state level, the Victorian Offshore Wind Implementation Statement process should also be included, as well as the NSW Renewable Energy Sector Board (RESB) and Plan.

The RESB is a good contemporary example of tripartite workforce and supply chain planning. The Board's Plan, has now been approved by the Minister and was incorporated into NSW onshore renewable energy tenders at the end of 2022, as well as other areas of government decision making and policy. The Plan sets out minimum labour, equity and local content requirements (as well as stretch targets), and sets out priority areas for government and private investment.

The RESB is a tripartite statutory board created under the NSW *Electricity Infrastructure Investment Act 2020,* with representatives from unions, steel manufacturers, metal fabricators, employers in the electricity, manufacturing and construction sectors, energy customers, and energy planners. It was established 'to make sure our local workers, communities and industries reap the economic benefits of the transition to cheap, reliable and clean electricity…in ways that are cost-effective for

all electricity consumers, drive sustainable growth and competitiveness of our industry, and provide quality jobs for new and existing workers in New South Wales.'[17]

The Board went through an initial research and planning process, underpinned by work from the University of Technology Sydney (UTS) Institute for Sustainable Futures, SGS Economics, MBB Group and ACIL Allen.[18] RESB members were able to participate in the commissioning the required research and providing feedback to researchers as the research progressed.

In particular the study on *Employment, Skills and Supply Chains: Renewable Energy in NSW – Final* produced by the Institute for Sustainable Futures at UTS is a landmark piece of research, for the way it examines supply chain and workforce gaps and opportunities for renewable energy in NSW, and clearly articulates steps forward for policy makers contending with critical planetary deadlines in a challenging environment.[19]

Analytical approach: Information gaps on offshore renewable energy

The biggest gap is the lack of a coherent national plan for offshore renewable energy. The Offshore Electricity Act was passed by the previous government, who were determined not to implement any planning process. Delivering the potential local benefits of offshore renewable energy and ensuring that projects are built as quickly as possible will require a coordinated national approach that involves industry, unions, and government. The MUA and other unions advocate for new offshore renewable energy governance arrangements, such as a Board or Task Force, to achieve this.

The 2023 Budget contained allocated $14.5 million over 4 years to accelerate the development of the offshore renewable energy industry growth strategy and regulatory compliance activities. Hopefully this can be used to develop workforce and supply chain planning for offshore renewable energy. National employment, skills and supply chain research is required to guide government decision-making.

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[17] Office of Energy and Climate Change, NSW Renewable Energy Sector Board's Plan, September 2022, p.3 The Plan was assessed against Australia's international trade obligations and electricity customers' financial interests (p.18-20), and then separately by the NSW Independent Pricing and Regulatory Tribunal (IPART).

[18] Studies commissioned by the NSW RESB are available under the header Renewable Energy Sector Board on this page.

[19] Briggs, C., Gill, J., Atherton, A., Langdon, R., Jazbec, M., Walker, T., Youren, M., Tjondro, M., Rutovitz, J., Cunningham, R., Wright, S. and Nagrath, K., 2022. *Employment, Skills and Supply Chains: Renewable Energy in NSW – Final Report*. Sydney: University of Technology Sydney and SGS Economics and Planning.

Information gaps on maritime occupations

In our submission, the most significant information gaps in understanding the maritime occupations that are and will be an essential part of the clean energy workforce are:

- Firstly, a gap in articulation of the actual occupations, by sector, for which Maritime Training Package (seafaring) and Transport and Logistics Training Package (stevedoring) qualifications and skills sets are providing the skills and competencies to perform to the standards required by regulations, licenses and job functions:
  - This is also reflected in the classifications or occupations listed in EBAs and Awards for which there are typically no defined qualification or skill set that match the job classification.
- Secondly, poor training commencement and completion data that is linked to VET qualifications and skills sets, whether the training is delivered under a Commonwealth TAFE or University funded program or under a fee for service program; and or whether delivered by a private provider. Unless there is aggregate data on commencements and completions, we will never know how many job ready graduates from training providers are available i.e. we will never have acuate supply side data. That is crucial for the new VET model proposed by the Government.

Improving information on maritime occupations

In terms of demand projections, the seafaring and stevedoring sectors are characterised by a relatively small number of employers and work sites which makes demand surveys relatively useful as a data collection method. In the seafaring sector, there have been Seafaring Skills Censuses undertaken in 2012, 2018 and 2023 which provide reasonably useful demand projection data. In stevedoring, similar demand surveys could be undertaken with the cooperation of bodies like Ports Australia However these surveys need to be funded on a periodic basis by Government.

We think that resolution of the taxonomy issue we refer to, and the new obligations resting with the JSA for maritime, ISA which will require it to be more closely linked to training delivery, are fundamental to resolving these information gaps.