



Industry Skills  
Australia

**Jobs and  
Skills  
Councils**

An Australian Government Initiative



# MARITIME INDUSTRY 2023 INITIAL WORKFORCE PLAN

# About Industry Skills Australia

Industry Skills Australia has been established as the Jobs and Skills Council for the nation's Transport and Logistics industry sectors, which includes Aviation, Maritime, Rail, Transport and Logistics, and the emerging sectors of Omnichannel Logistics and Distribution, and Air and Space Transport and Logistics.

Owned and led by industry, our Jobs and Skills Council is committed to building a world-class supply chain workforce to increase productivity, create better jobs and build opportunities for individuals.

We will do this through:

- leveraging our more than 30-year history with the transport and logistics industry,
- undertaking research and data analysis to inform workforce planning,
- advocating for a workforce development approach in tackling industry skills issues, and
- developing priority training package products.

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## Acknowledgements

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# About the Initial Workforce Plan

Workforce Planning is the strategic centrepiece for Jobs and Skills Councils to inform and establish each of their other functions. This Initial Workforce Plan represents a stock take of existing information and sets a path for prioritising and diagnosing workforce challenges. The Plan will inform initial strategies and actions of Industry Skills Australia. As this is an Initial Workforce Plan, it has been developed using data and information collected through the transition from previous industry engagement arrangements, desktop analysis, preliminary stakeholder engagement and industry insights gathered through Jobs and Skills Council governance arrangements. In developing the Initial Workforce Plan, we leveraged our deep understanding of 'the state of play' across each of the four industries to produce four Skills Priorities Papers. These papers outlined common megatrends impacting on industries and specific workforce challenges and opportunities. Following targeted consultation with 'critical friends' including State and Territory Training Authorities, these Skills Priorities Papers formed the backbone of our workforce plans.

Informed by this consultation and a quantitative and qualitative evidence base, Industry Skills Australia's 2023 Initial Workforce Plans provide an important baseline for our Strategic Workforce Planning Committees as they embark on developing the 2024 workforce plans for their sectors.

The Initial Workforce Plan is not intended to include all jobs and skills-related challenges, but indicate the many areas in which Industry Skills Australia will develop collaborative relationships, conduct further research and evidence collection, and build workforce planning capability and expertise.

The Plan will be used to further engage with stakeholders, with the feedback received incorporated into future iterations of the Plan. As Jobs and Skills Councils mature and as the Plan is updated each year, the Plan will seek to better understand current, emerging and future workforce challenges and opportunities, including skills gaps and shortages for all industries within Industry Skills Australia's remit, including small, niche and regional sectors and to develop appropriate strategies and advice for addressing diagnosed challenges. This also includes working with Jobs and Skills Australia to better understand the outlook for employment for each industry sector.

The 2023 Initial Workforce plan builds the themes to work towards a 2024 Workforce Plan which will start to put forward strategies to address industry drivers/challenges.

Critical Industry Stakeholders are provided multiple opportunities to engage in the development and implementation of the Workforce Plan<sup>1</sup>. Industry Skills Australia subscribers will receive notification of public consultation on the 2024 Workforce Plan. Industry Skills Australia welcomes stakeholder input for future Workforce Plans.

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<sup>1</sup> Critical Industry Stakeholders are those organisations whose support for the Workforce Plan is considered critical to its broad acceptance by industry and governments.

# Executive Summary

The Maritime industry comprises the operation, co-ordination and maintenance of vessels for the transportation of passengers or freight by water. The activities of the industry can be categorised into five (5) occupational areas (with further details provided in **Appendix A Maritime Occupational Areas**):

- **Navigation** - commanding and navigating vessels.
- **Engineering** - maintaining marine systems, equipment, operation and maintenance of machinery and ships engines.
- **Deck Operations** - performing duties and functions on a vessel and/or assisting with deck or engine work.
- **Support Operations** - performing duties and functions to support vessel operations.
- **Autonomous Operations** - working or supervising Autonomous Maritime Systems operations in Near Coastal waters.

The industry includes seafarers who work on commercial and non-commercial (government) vessels and personnel who are required to be certified by the Australian Maritime Safety Authority (AMSA)

Seafarers who work on domestic commercial vessels are required to hold Near Coastal AMSA certification. Seafarers who work on Australian or International vessels in Australian waters are required to hold STCW (Standards of Training, Certification and Watchkeeping) AMSA certification. To achieve AMSA certification seafarers are required to complete an approved course of study and qualifying sea time.

The industry is an intrinsic part of the Australian economy, employing over 26,000 <sup>2</sup> people across the major subsectors: passenger and freight transport, tourism and support services. <sup>3</sup> The industry has an estimated annual revenue of \$7 billion in 2022-23, adding \$2.6 billion to the Australian economy. <sup>4</sup> The average age of workers in the maritime industry is 44.8 years, <sup>5</sup> with women making up 25.7% of the workforce. <sup>6</sup>

Four megatrends have been identified that are impacting the Australian economy, businesses, and people. The megatrends identified in the workforce plan duplicate many of the industry drivers/challenges and are explored in the specific industry context in that section of the Workforce Plan. The megatrends include:

- Digital technology and automation
- Decarbonisation
- Workforce supply challenges
- Industry skills development

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<sup>2</sup> Australian Bureau of Statistics (2023, quarterly average) Labour Force Survey, EQ06 - Employed persons by Industry group of main job  
<sup>3</sup> NOTE: The water transport workforce is a sub-category of all domestic seafarers and related figures are presented as merely representative of the broader maritime workforce. The ANZSCO codes do not accurately capture the workforce size. For example, Marine Engineers are only counted from Diploma level and up which misrepresents the size of the employed marine engineers. Industrial and workforce data relating to marine rescue, fishing, aquaculture and other industries that utilise the Maritime Training Products are not captured.

<sup>4</sup> IBISWorld Industry Wizard (2023)

<sup>5</sup> Australian Bureau of Statistics (2021) '2021 Census - Employment, income and education', TableBuilder

<sup>6</sup> Australian Bureau of Statistics (2023, quarterly average) Labour Force Survey, EQ06 - Employed persons by Industry group of main job

Challenges impacting the supply and demand of workers in the maritime industry include:

- **Shortages** of Masters, Officers, Engineers and Integrated Ratings, ageing workforce, long lead times to achieve AMSA certification and challenges retaining qualified seafarers impacts the workforce's capability to support national projects and initiatives such as the Maritime Strategic Fleet.
- **Australia** is grappling with significant labour shortages which reduces the pool of potential labour that can be accessed in the maritime industry.
- **Decarbonisation strategies** to meet industry target of net zero by 2050 using new technology, alternative fuels, automation, and digital technologies has impact for skills required for maritime workers.
- **Regulatory changes** for Near Coastal job roles in response to a new maritime regulation Marine Order 505 (Certificates of competency – National Law) require amendments to the Maritime Training Package. This project has commenced.
- **Skills pipeline** is being impacted by the cost of delivering AMSA certified qualifications and inability for seafarers to complete qualifying seagoing service.

Developing evidence-based responses to all four of the challenges is impacted by limitations in the data available. Outside of Census years, the resolution of labour force data is not high due to ANZSCO limitations. The 2023 Initial Workforce Plan will be used as the basis to further engage with stakeholders and gather real-time workforce intelligence to inform evidence based and Industry supported responses in 2024 Maritime Workforce Plan.

The plan also identifies several related existing workforce strategies and initiatives and maps the challenges and drivers to them. Where relevant, the 2024 Workforce Plan will seek to align with, or contribute to, these strategies and initiatives, or collaborate with those responsible implementing them.

MARITIME  
BUSINESS NO.

**3099**

35 with 200+  
employees

161 with 20-199  
employees

2903 with 0-19  
employees

AUSTRALIA'S  
INTERNATIONAL  
TRADE

**99%**  
CARRIED BY  
SEA

TOP 4 SECTORS  
BY WORKFORCE NO.

Transport Terminal  
Operations & Other Services  
14.7k

Water Freight Transport  
3.7k

Scenic & Sightseeing Transport  
3.5k

Water Passenger Transport  
3.4k

BUSINESS  
DISTRIBUTION BY  
STATE %



DOMESTIC FREIGHT  
TASK GROWTH

**2.1%**

projected to 2030

ESTIMATED ANNUAL  
REVENUE

**\$7b**

2022-2023

GDP CONTRIBUTION

**\$2.57B**

maritime industry

Sources  
ABS Counts of Australian  
Businesses  
Business No  
Distribution of businesses

ABS Labour Force  
Top four Sectors

BITRE Yearbook 2022  
Domestic Freight Task  
Growth

AMSA Corporate Plan  
2023-24  
Trade by Sea

IBISWorld  
Annual revenue  
GDP contribution

# Megatrends Across Industries

Four megatrends have been identified that are impacting the Australian economy, businesses, and people. A megatrend is a pattern or trend that has a massive impact on the way businesses operate and how people live in society. The identified megatrends create both challenges and opportunities which can be addressed through forward planning and workforce development.

## Digital Technology and Automation

Automation and digital technologies are revolutionising industries and reshaping business operations. Automation is being driven by growing e-commerce and consumer demands, as well as the recent pandemic, which accelerated the adoption of digital transformation by several years.<sup>7</sup>

The Transport and Logistics industry has been an early adopter of automation and digital technologies.<sup>8</sup> The use of robotics,<sup>9</sup> drones and big data analytics<sup>10</sup> to optimise operations and improve productivity is well underway, while the data produced by telematics and sensors can offer opportunities such as fuel efficiency and dynamic routing, and better fleet maintenance.

Several Australian ports, such as the Victoria International Container Terminal, have been automated with advanced technologies,<sup>11</sup> creating more efficiency and a safer working environment. Autonomous trucks have been recently trialled<sup>12</sup> in Australia. The Maritime industry is also trialling the use of autonomous vessels,<sup>13</sup> which will increase safety, security and efficiency of vessels. There are also remotely operated vessels that can have seafarers on board, but with processes and operations either automated or remotely operated.

The aviation industry is similarly utilising cutting-edge technologies such as Uncrewed Aircraft Systems (UAS), remote digital tower technology,<sup>14</sup> OneSky (a harmonised civil and military air traffic management system),<sup>15</sup> and Satellite-Based Augmentation System (SBAS).<sup>16</sup> The Rail industry is operating autonomous trains, smart devices and automated asset inspections using LiDAR (Light Detection and Ranging) in asset management.

The role of humans in operating and maintaining autonomous and digital technology enhanced systems remains highly significant and workers will need to have the technical skills to work safely with new technologies.<sup>17</sup>

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<sup>7</sup> McKinsey. (2020). *How COVID-19 has pushed companies over the technology tipping point—and transformed business forever*

<sup>8</sup> Deloitte Insights. (2021). *The journey toward a touchless network through intelligent automation: The future of movement of goods*

<sup>9</sup> DHL Insights. (2022). *Australia's e-commerce companies are getting a boost with warehouse automation*

<sup>10</sup> MHD Supply Chain News. (2023). *2023: A pivotal year for technology in supply chain. March*

<sup>11</sup> Productivity Commission. (2022). *Lifting productivity at Australia's container ports: between water, wharf and warehouse. Inquiry Report. Australian Government*

<sup>12</sup> Big Rigs. (2022). *Self-driving trucks hit the road for Australia's first live-traffic trial. November*

<sup>13</sup> Australian Maritime Safety Authority. (2022). *Autonomous vessels in Australia*

<sup>14</sup> Australian Aviation. (2019). *Airservices to trial remote digital tower prototype at Sydney. November*

<sup>15</sup> Airservices. (NA). *What is OneSKY?*

<sup>16</sup> Australian Flying. (2018). *Airservices launches SBAS Project. April*

<sup>17</sup> iMove. (2023). *Creating our future transport and mobility workforce Understanding the workforce implications of transport digitalisation and automation in Australia*



# Decarbonisation

The adoption of sustainable practices and technologies to reduce Australia's carbon emissions has been gaining pace. The Australian Government is investing \$24.9 billion in the next seven years to support the development of new clean energy industries and the decarbonisation of existing ones.<sup>18</sup> Businesses and industries are adopting sustainable practices and technologies, which will not only benefit the environment but also contribute to their economic growth and competitiveness.

Transport accounts for  $\frac{1}{4}$  of Australia's Energy use

The supply chain is relying on autonomous technology and alternative fuels such as hydrogen to reduce its carbon footprint. Trials for zero-emissions hydrogen fuel-cell battery trucks are already underway in Australia.<sup>19</sup> The use of hydrogen and fuels such as ammonia is also gaining traction in the maritime industry with trials already underway.<sup>20</sup>

The aviation industry is transitioning towards alternative fuels such as hydrogen, but the implementation may take some time. In the shorter term, ground equipment powered by hydrogen powered fuel cells is being introduced.<sup>21</sup> The rail industry is similarly focusing on technologies such as hydrogen or battery electric to phase out diesel trains.

These developments are aligned with a global move towards a green economy. A recent KMPG survey of more than 1300 CEOs [identified](#) that 62% of respondents were considering investment in sustainability.<sup>22</sup> The most recent Future of Jobs Report from the World Economic Forum also identified that roles related to sustainability are among the fastest growing.<sup>23</sup> In Australia, about a quarter of businesses have reported an increasing need for emerging skills related to green economy.<sup>24</sup>

Supply chain and affiliated industries are well positioned to be a key enabler of environmental sustainability.<sup>25</sup> Introduction of these carbon reduction measures will require the workforce to have the skills and knowledge to safely work with new technologies and comply with regulations.

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<sup>18</sup> Climate Council. (2022). *The federal budget: three highlights and lowlights for climate*. October

<sup>19</sup> Power Torque. (2023). *First Aussie Hydrogen Truck*. July

<sup>20</sup> Offshore Energy. (2023). *Carisbrooke Shipping to trial hydrogen engine on board one of its vessels*. February

<sup>21</sup> CSIRO. (2023). *Opportunities for hydrogen in commercial aviation*

<sup>22</sup> KMPG. (2022). *KMPG 2022 CEO Outlook: Growth strategies in turbulent times*

<sup>23</sup> World Economic Forum. (2023). *The future of job reports 2023*.

<sup>24</sup> AiGroup. (2022). *2022 Skills Survey: Listening to Australian businesses on skills and workforce needs*

<sup>25</sup> Australia Post. (2021). *Supply Chain Leaders' Sentiment Report*.

# Workforce Supply Challenges

Australia is grappling with significant labour shortages across many industries, including those supported by Industry Skills Australia. There is a general shortage of skills partly due to the border closures and slowing down of the migration in 2020 and 2021 because of the pandemic.<sup>26</sup> The Australian Bureau of Statistics reported that in November 2022, there were about 444,000 vacancies, which is deemed to be an indication of labour shortage.<sup>27</sup> The Australian Industry Group similarly indicated that 71% of businesses encountered difficulty in recruiting technicians and trade workers.<sup>28</sup>

The aviation industry has faced significant challenges and operational issues such as cancellation or long delays of flights due to a shortage of ground crew, pilots,<sup>29</sup> or air traffic control staff.<sup>30</sup> The pilot shortage has impacted regional airlines even more severely.<sup>31</sup> The rail industry has also reported workforce shortages in key roles such as train drivers, controllers, or signalling technicians.<sup>32</sup> These shortages may slow down the completion of infrastructure projects over the next three years.<sup>33</sup> Rail workforce shortages are being further exacerbated by growing skills gaps caused by the advent of new technologies and the need for upskilling for the existing workforce.

A shortage of truck drivers is reported across every state and territory in Australia according to the latest Skills Priority List.<sup>34</sup> The addition of truck drivers to the national Skills Priority List is a strong indication of the current and future demand for this occupation.<sup>35</sup> The maritime industry has also highlighted skills shortages as a key risk.<sup>36</sup>

Workforce shortages are even more severe in Regional, Rural and Remote Australia where attracting skilled workers and filling available job roles is even more challenging. A series of interconnected issues contribute to these challenges, including lack of availability of housing and childcare, shortage of training facilities, trainers, and assessors, and lack of good quality digital connectivity.<sup>37</sup>

**Occupations with a strong gender imbalance  
are more likely to be in shortage**

Globally, organisations have started to prioritise the attraction and retention of new talent.<sup>38</sup> Similarly, Australian businesses are investing in staff training, developing skills, and attracting young people and more women into traditionally male-dominated industries and occupations.<sup>39</sup> The Australian Government is also focusing efforts on removing barriers and providing the right incentives and conditions to attract more workers to regional Australia.

<sup>26</sup> Financial Review. (2022). *Why we don't have enough workers to fill jobs (in four graphs)*. June

<sup>27</sup> Australian Bureau of Statistics. (2023). *Job vacancies fall but remain high at end of 2022*. Media Release January

<sup>28</sup> AiGroup. (2022). *2022 Skills Survey: Listening to Australian businesses on skills and workforce needs*

<sup>29</sup> Financial Review. (2023). *The 'alarming' workforce trend causing flight delays*. February.

<sup>30</sup> The Sydney Morning Herald. (2023). *Airlines call for action on air traffic controller shortage as flight delays continue*. August

<sup>31</sup> Simple Flying. (2023). *Rex flying solo to fix Australian pilot shortage*. May

<sup>32</sup> Australasian Railway Association. (2022). *Building Australian Rail Skills for the Future*

<sup>33</sup> Infrastructure Magazine. (2022). *Preparing for the infrastructure boom during a labour shortage*. September

<sup>34</sup> National Skills Commission. (2022). *2022 Skills Priority List*

<sup>35</sup> National Skills Commission. (2022). *2022 Skills Priority List Key Findings Report*

<sup>36</sup> Parliament of Australia: Senate Inquiry (2020). *Policy, regulatory, taxation, administrative and funding priorities for Australian shipping*

<sup>37</sup> Houghton, K., Barwick, A, and Pregellio, S. (2023) *Regional Jobs 2022: The Big Skills Challenge*, Regional Australia Institute, Canberra.

<sup>38</sup> KMPG. (2022). *KMPG 2022 CEO Outlook: Growth strategies in turbulent times*

<sup>39</sup> AiGroup. (2020). *An Apprenticeship Model for the modern economy*

# Industry Skills Development

The Vocational Education and Training (VET) system in Australia is well positioned to supply the skills and knowledge required for the future of work. However, barriers such as perceptions of the VET sector<sup>40</sup> and shortages of qualified trainers are impacting on the attractiveness of the sector to prospective learners and on learner outcomes.<sup>41</sup>

The challenges are even greater in regional and remote areas, where there is:

- lack of high-quality training facilities and up-to-date equipment
- lack of RTOs and appropriately qualified Trainers/Assessors
- increased costs of training delivery
- mismatches between funding and training needs
- issues with language, literacy, numeracy and digital literacy
- the need for cultural competency in working with First Nations communities, further compound the situation.<sup>42</sup>

The Australian Government has committed to providing increased funding for improving the quality of TAFE facilities, fee-free TAFE and community-based vocational education places, as well as funding for improving quality teaching.<sup>43</sup> Creating greater flexibility with the VET system can yield better results by attracting more learners and leading to improved learner outcomes.<sup>44</sup>

Establishment of clearer career pathways and articulation arrangements that enable learners to seamlessly transition from the schools sector into VET and onwards to Higher Education are needed to build opportunities for individuals and support the shift to higher skilled job roles.

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<sup>40</sup>Parliament of Australia. (2023). *Inquiry into the Perceptions and Status of Vocational Education and Training. Terms of Reference.*  
<sup>41</sup>*ibid.*

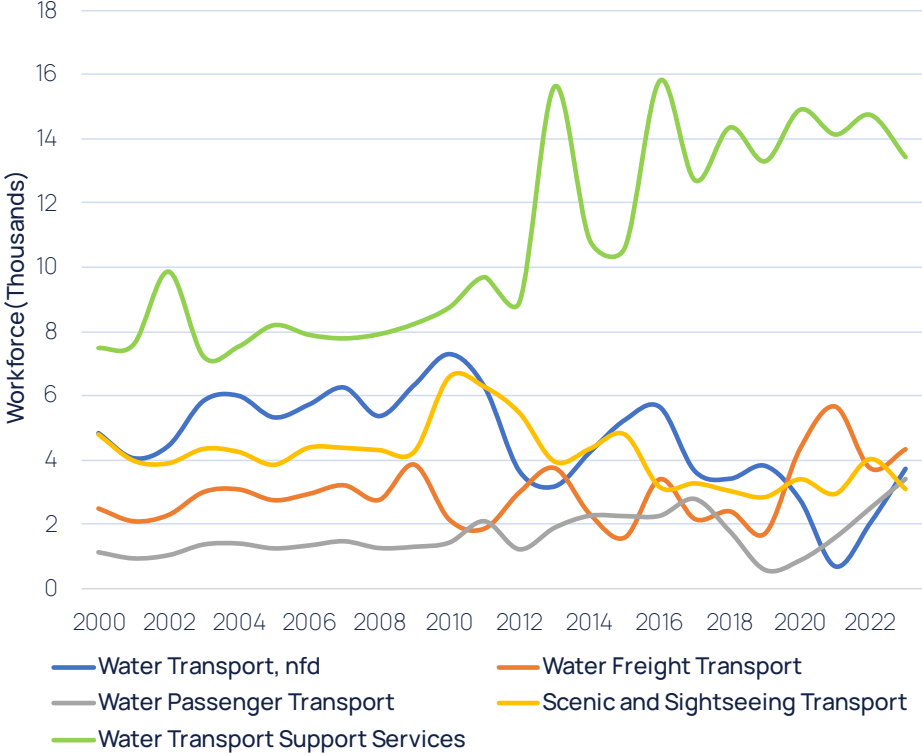
<sup>42</sup>Tabatha, G. & Andrahannadi, U. (2023). *VET delivery in regional, rural and remote Australia: barriers and facilitators, NCVER*

<sup>43</sup>Australian Government. *Budget October 2022-23 Skills and training: Giving Australians the skills they need for higher-wage jobs*

<sup>44</sup>The Regional Australia Institute (2023). *2023-2024 Federal Government Pre-Budget Submission.*

# Maritime Industry Data

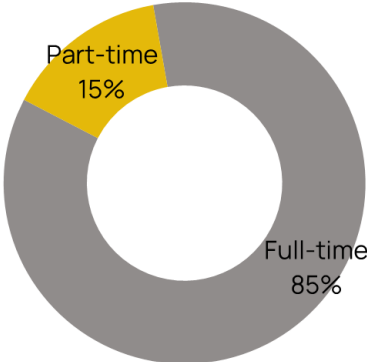
## Employment and distribution



Source: ABS Labour Force Survey

Figure 1: Maritime Industry Workforce, 2000 - 2023

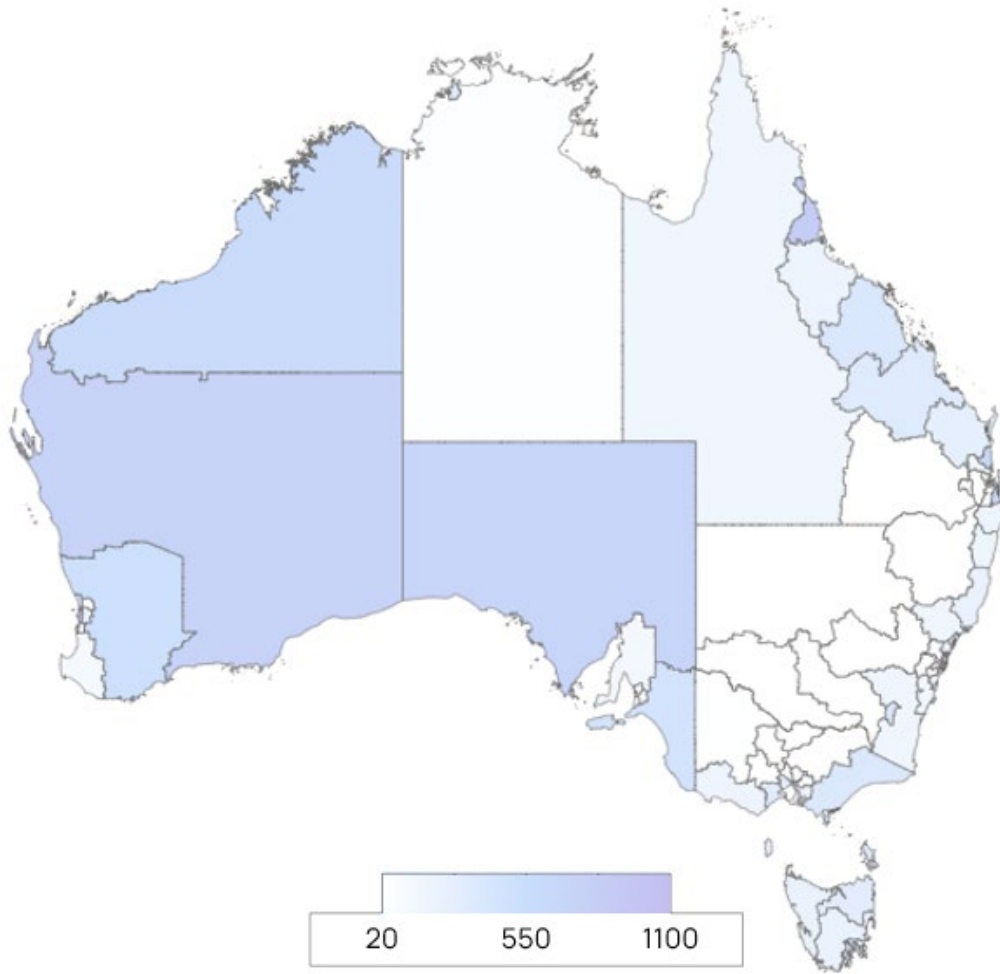
The Maritime Transport industry\* employs more than 26,000 people



Source: ABS Labour Force Survey

Figure 2: Employment status 2023

Maritime workers are relatively well distributed around Australia's coast, but more than 30% are based in Queensland.



Source: JSA, NERO 2023

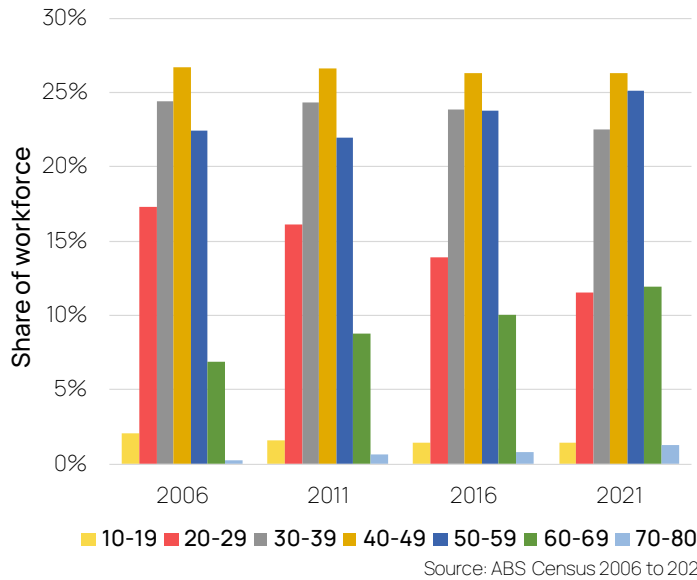
**Figure 3:** Residential distribution of Maritime Workers, 2023

Geography	% of workers	Growth (since 2015)
Major City	29.14%	4.46%
Regional	45.87%	15.57%
Remote	24.99%	-6.35%

**Table 1:** Residential Distribution and Growth of Maritime Workers by Geography

Source: JSA, NERO 2023

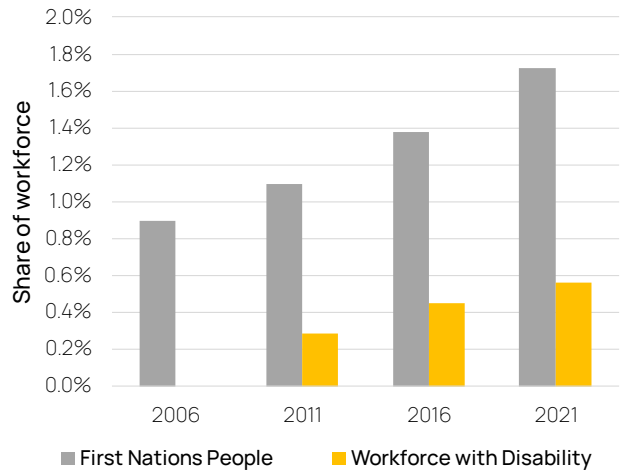
## Demographics



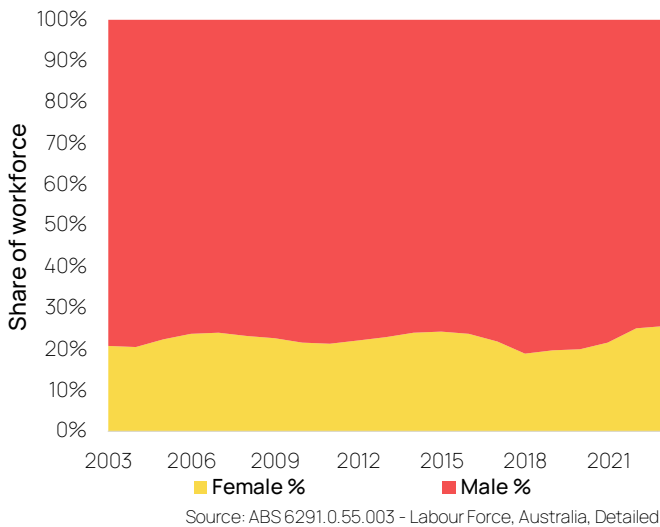
**Figure 4:** Maritime Industry Age Profile, 2006 - 2021

*43.8% of the Maritime workforce were aged below 40 in 2006 but this share reduced to 35.4% in 2021. More than half of the workforce (51%) were aged between 40 and 60 in 2021.*

*The share of First Nations people in the Maritime workforce has nearly doubled (92.6%) since 2006 as has the share of the workforce with disability since 2011#*



**Figure 5:** First Nations people and Disability Composition in Maritime Workforce, 2006 - 2021

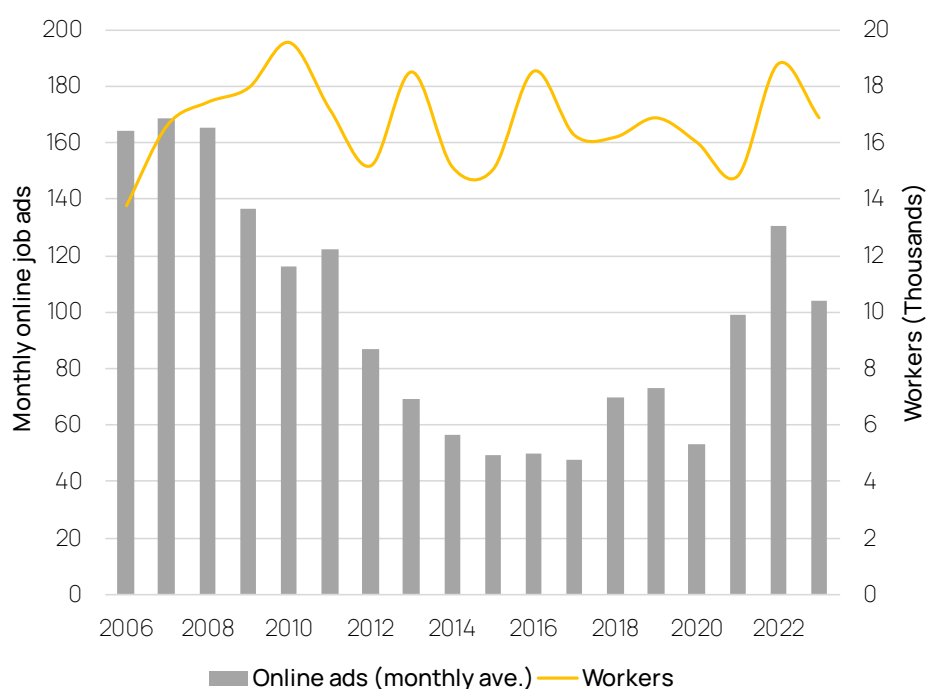


**Figure 6:** Female participation 2000 - 2023

*Female participation in the maritime industry has remained relatively stable over the last 20 years and now represents a quarter of the workforce.*

## Occupations

Though softening somewhat this year, the number of online job ads for Maritime workers reached levels in 2022 not seen since 2009.



Source: ABS Labour Force/JSA Internet Vacancy Index

**Figure 7:** Maritime Workers and Online Job Ads, 2006 - 2023

According to the Census, **peak employment for Maritime workers** coincided with the resources sector boom around 2011, though online job ads had been declining since 2008.

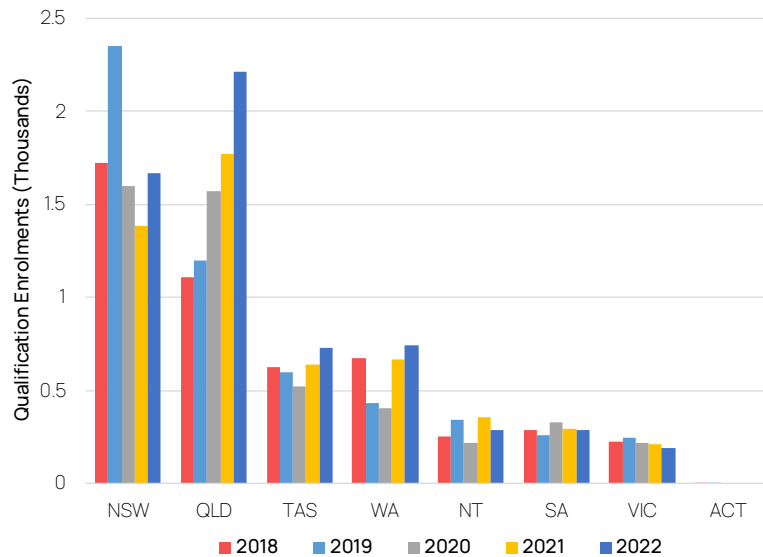
Occupation	2006	2011	2016	2021	Ave. Growth	Future demand*
Ship's Master	2909	3462	3488	3576	1.39%	Soft
Deck Hand	2762	3057	2612	2473	-0.73%	Moderate
Ship's Engineer	1737	1913	1841	1877	0.52%	Soft
Ship's Officer	660	713	585	521	-1.56%	Soft
Marine Surveyor	396	409	445	483	1.33%	Soft

**Table 2:** Top Maritime Occupations, Growth and Demand

Sources: ABS Census, Skills Priority List (6 October, 2022)

## Training

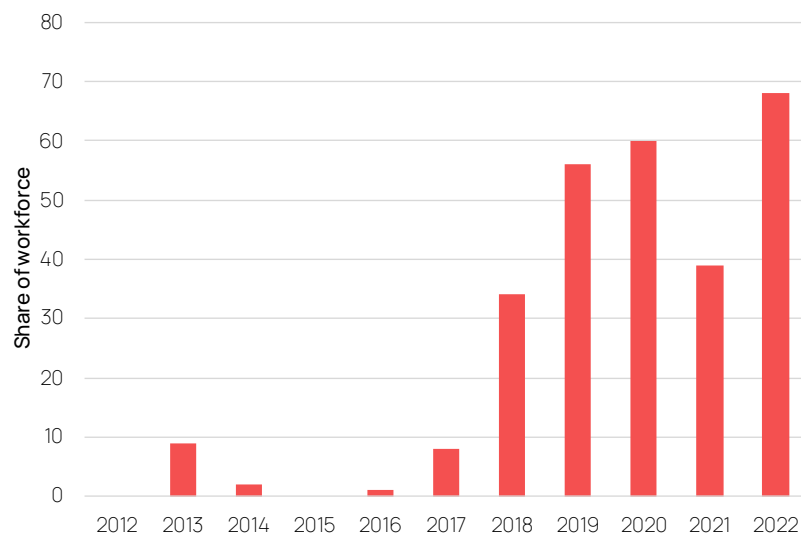
In keeping with the workforce distribution, Queensland was host to the **largest** number of maritime qualification enrolments in 2022, accounting for more than a third (36%) of all enrolments.



Source: NCVET Total VET Activity

**Figure 9: Commencing Maritime Qualification Enrolments, 2017 - 2022**

*The number of students enrolling in Maritime qualifications had been growing steadily since 2015, reaching a peak of 227 students in 2020.*



Source: NCVET VET in Schools

**Figure 8: Maritime VETiS Students, 2022**



# Key challenges and drivers affecting the maritime workforce

## A. We need to be planning now for large scale projects and initiatives involving the maritime workforce

Several upcoming national infrastructure projects and initiatives will require workers from the maritime industry. These projects will provide numerous economic benefits to Australia however, they also present challenges for building and maintaining a qualified maritime workforce. These projects and initiatives will include the crewing, operation, and maintenance of:

- vessels associated with the proposed maritime strategic fleet
- renewable energies including wind farms
- offshore commissioning and decommissioning.

Australian Maritime Safety Authority (AMSA) certifications are complex and extensive and include the achievement of a maritime training package qualification or of Skill Sets and units of competency. It can take up to 10 years for people to become AMSA certified for senior Engineering and Deck Officer job roles. <sup>45</sup>

The long lead times for seafarers to become Standards of Training, Certification and Watchkeeping (STCW) AMSA certified makes it critical to start planning now for maritime projects and training the workers who will be needed.

With shortages of Masters, Officers, Engineers, and Integrated Ratings, along with challenges in attracting and retaining workers, industry stakeholders have raised concerns about workforce capability to support these infrastructure projects.

According to the Census, Maritime workers have been decreasing in both absolute and relative terms since 2011. In the 10 year period to Census 2021, the number of maritime workers decreased by 6.5%. At the same time the overall Australian labour force increased by nearly 20%. <sup>46</sup> More recent data sources point to an increase in the Maritime workforce since 2020 with 10.9% growth between 2021 and 2023. <sup>47</sup>

However, it is unclear whether this recent growth trajectory will meet the demands of the new projects and initiatives.

Projected growth, as illustrated in **Table 2: Top Maritime Occupations, Growth and Demand** does not take into account the needs that will arise from these projects and initiatives. These estimates will need to be determined in consultation with stakeholders.

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<sup>45</sup> AIMPE and AMOU (Dec 2022). *Submission to Strategic Fleet Taskforce - AIMPE AMOU initial strategic assessment*

<sup>46</sup> ABS, *Census 2006-2021*

<sup>47</sup> *Nowcast of Employment by Region and Occupation, Jobs and Skills Australia (2023)*

UPTO  
**10yrs**

to become  
AMSA certified  
for Engineering  
and Deck  
Officer roles

STRATEGIC  
FLEET  
TASKFORCE OF  
12 VESSELS  
WILL REQUIRE

**200**

Engineering and  
Deck Officers

At the same time, the maritime industry is experiencing challenges in retaining workers, with qualified seafarers leaving the industry to look for alternative career options. The realities of working job roles that involve extended periods away from home,<sup>48</sup> can make these occupations less attractive over time, especially for an ageing workforce (see age profile in **Figure 4**)

The average age of maritime workers was 44.8 in Census 2021, an increase from 42.6 in 2006, and well above the national average of 40.9.<sup>49</sup>

If we are to meet the demand for skilled and qualified seafarers for these projects, we need to start planning now. We need to know:

- how many workers we are going to require
- how many workers we can get skilled in time.

The Terms of Reference for the Strategic Fleet Taskforce<sup>50</sup> suggests a fleet is likely to include up to 12 vessels. Unions report this would require a workforce of 200 deck and engineering officers,<sup>51</sup> and 216 ratings<sup>52</sup> and trainee cadets.<sup>53</sup> However final recommendations from the Strategic Fleet Taskforce will need to be considered to determine how many skilled workers will be required to crew, maintain, and operate these vessels.

Similarly, the workforce requirements for offshore wind farms will be dependent on Government approval to add up to 50GW of capacity to the Australian grid by 2030<sup>54</sup>. It is expected that offshore wind farms will create jobs across the maritime industry. However, further consultation will be required to determine the scope of the impact of offshore wind on maritime industries and its affiliated occupations, as well as to identify workforce gaps and opportunities. Offshore wind projects already operationalised in other countries such as America and the United Kingdom can serve as a blueprint for further research and consultation with maritime and energy industry stakeholders.

<sup>48</sup> Brooks, S.K., Greenberg, N. (2022). *Mental health and psychological wellbeing of maritime personnel: a systematic review*. BMC Psychol

<sup>49</sup> ABS, Census 2006-2021

<sup>50</sup> Department of Infrastructure, Transport, Regional Development, Communications and the Arts (Oct 2022). *Terms of Reference for Strategic Fleet Taskforce*.

<sup>51</sup> AIMPE and AMOU. (Dec 2022). *Submission to Strategic Fleet Taskforce - AIMPE AMOU initial strategic assessment*

<sup>52</sup> Maritime Union of Australia (MUA) (Dec 2022). *Submission to Strategic Fleet Taskforce (STF)*.

<sup>53</sup> AIMPE and AMOU. (Dec 2022). *Submission to Strategic Fleet Taskforce - AIMPE AMOU initial strategic assessment and Maritime Union of Australia (MUA) (Dec 2022). Submission to Strategic Fleet Taskforce (STF)*.

<sup>54</sup> Offshore Wind Farm Map of Australia, [reneweconomy.com.au](https://reneweconomy.com.au) (accessed June 2023)

The offshore industry relies on a multidiscipline workforce<sup>55</sup>, including seafarers to commission and decommission its oil and gas assets. As Australia's offshore petroleum industry sector matures, decommissioning obligations are increasing.<sup>56</sup> While the involvement of seafarers in these projects may vary depending on the scope, complexity and type of offshore asset,<sup>57</sup> seafarers can provide essential vessel operations and support services to commissioning and decommissioning teams. However, further consultation will be required to identify workforce capabilities, gaps<sup>58</sup> and opportunities.

Stakeholders are also reporting that the upturn in offshore oil and gas and other emerging energy projects, as well as the increase in transshipment operations, navy support and government owned vessels and shipbuilding, will also need to be taken into consideration when workforce planning.

We need to develop a model that will support industry to plan for the workforce and skills requirements of these projects more accurately. ISA will conduct further research and stakeholder consultation including with Jobs and Skills Australia (JSA), to determine the best approach to developing a planning model.

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*55 Offshore energies UK. (2022). Workforce Insight 2022.*

*56 National Offshore Petroleum Safety and Environmental Management Authority. (2022). NOPSEMA decommissioning compliance plan.*

*57 ACCR. (2023). Offshore oil and gas asset decommissioning.*

*58 Australian Government Department of Industry, Science and Resources. (2023). Roadmap to establish an Australian decommissioning industry for offshore oil and gas: Issues paper. September.*

ENROLMENTS  
ARE

**23%**

LOWER AMONG  
MARITIME  
RTOs

CHALLENGES OF  
LOW ENROLMENT  
NUMBERS  
INCLUDE

INCREASED COSTS FOR  
SEAFARERS

LIMITED DELIVERY LOCATIONS

LACK OF INNOVATION



## B. The cost of delivering AMSA certified qualifications is creating a barrier to the skills pipeline for STCW occupations.

As a signatory to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), AMSA is required to monitor training and assessment of competence carried out by registered training organisations, which contributes to an AMSA licence.<sup>59</sup>

Approved registered training organisations are required to demonstrate they meet International Maritime Organization (IMO) requirements relevant to their training assessment system, including methods of delivery, assessment instruments,<sup>60</sup> Recognition of Prior Learning (RPL) processes,<sup>61</sup> industry certification for assessors,<sup>62</sup> equipment, and simulators.<sup>63</sup>

Students are required to take an AMSA approved course at an AMSA approved registered training organisations to obtain an AMSA certificate of competency. Approved training courses for STCW occupations include qualifications and Skill Sets from the Maritime Training Package.<sup>64</sup>

Registered training organisations need to make a significant investment to register, develop, and maintain training courses that deliver highly specialised and technical job skills with stringent regulatory requirements (such as the STCW). Their ability to achieve economies of scale to offer and provide cost-effective courses is challenged when enrolment numbers are low and can result in a lack of training delivery in specific regions and specific skill areas. Enrolments per RTO are 23% lower among Maritime RTOs than the average,<sup>65</sup> directly impacting their capacity to recoup and sustain the substantial investment required.

Stakeholders are reporting flow-on impacts of low enrolments, such as limited numbers of approved STCW registered training organisations, limited delivery locations, increased costs for seafarers and employers (enrolment fees, and/or additional course costs such as travel and accommodation), limited training intakes and lack of innovative delivery models.

<sup>59</sup> <https://www.amsa.gov.au/qualifications-training/training-organisations/evaluations-stcw-certificate-competencyproficiency> (accessed June 2023)

<sup>60</sup> <https://www.amsa.gov.au/qualifications-training/training-organisations/stcw-training-and-assessment-quality-standards-and> (accessed June 2023)

<sup>61</sup> <https://www.amsa.gov.au/qualifications-training/training-organisations/stcw-recognition-prior-learning-policy-mt03> (accessed June 2023)

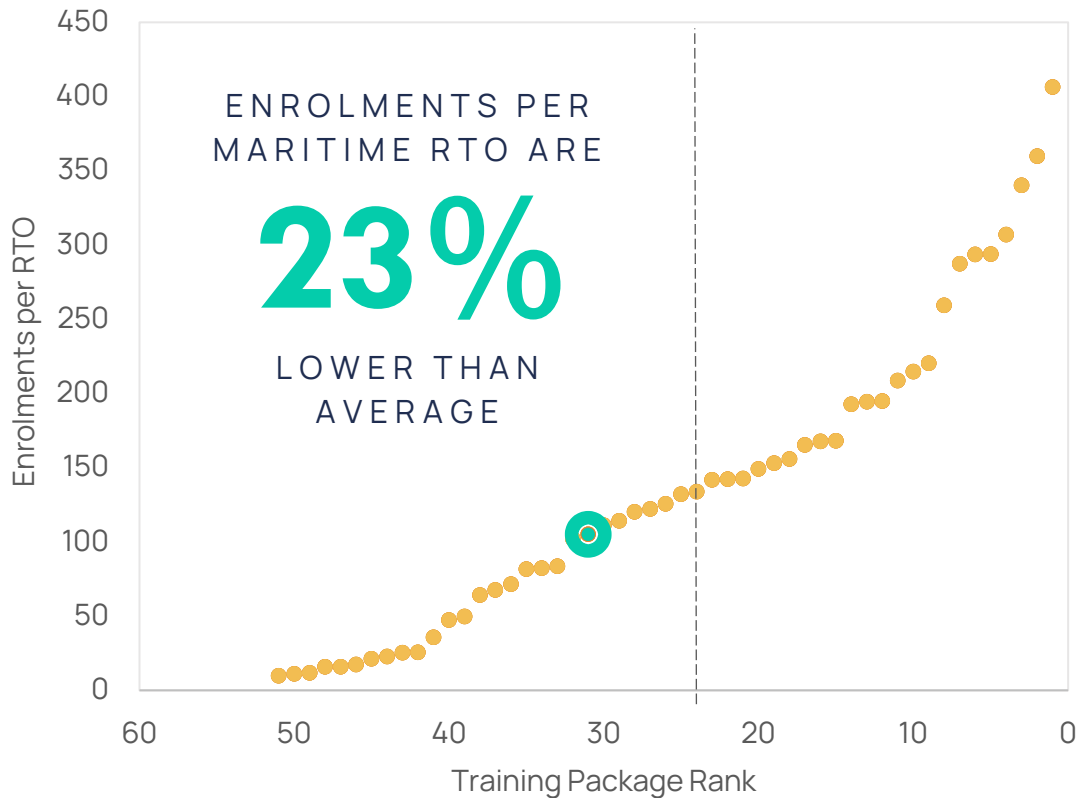
<sup>62</sup> <https://www.amsa.gov.au/qualifications-training/training-organisations/lecturer-qualifications-required-stcw-course-delivery> (accessed June 2023)

<sup>63</sup> <https://www.amsa.gov.au/qualifications-training/training-organisations/stcw-training-and-assessment-quality-standards-and> (accessed June 2023)

<sup>64</sup> <https://www.amsa.gov.au/qualifications-training/training-organisations/our-approval-all-stcw-courses-provided-registered> (accessed June 2023)

<sup>65</sup> NCVET, Total VET Activity (2015-2021), [training.gov.au](http://training.gov.au) (accessed June 2023)

While there is a strong relationship between the achievement of an AMSA certification and employment outcomes, there is also an ongoing need for stakeholders, including governments and industry, to explore fair and equitable funding models that make training viable for registered training organisations and cost effective for seafarers. This is an area that will require further industry and stakeholder consultation.



Source: NCVET Total VET Activity, training.gov.au 2023

**Figure 10** Enrolments by Training Package

# DECLINE OF AUSTRALIAN FLAGGED VESSELS

IMPACTS SEAFARERS' ACCESS TO VESSELS AND CAPACITY TO COMPLETE SEA TIME REQUIRED FOR STCW CERTIFICATION

## C. The inability to complete qualifying seagoing service to achieve AMSA certification makes it critical to start working on solutions to maximise training berths

To be eligible to receive AMSA certification to work in the industry, a seafarer needs to complete a specified amount of qualifying seagoing service ('sea time') on a vessel. <sup>66</sup> Without completing qualifying sea service, seafarers are unable to be AMSA certified and are unable to work in the industry. <sup>67</sup> Each job role and certification pathway have different requirements, which stipulate the length of sea service, duties that are to be completed and the type of vessel that sea service needs to be completed on. <sup>68</sup>

Stakeholders are reporting that the decline of Australian flagged vessels in favour of foreign flagged and crewed vessels has impacted seafarers' access to vessels and their capacity to complete sea time and sea based training requirements for VET qualifications to achieve STCW certification.

Stakeholders are reporting that COVID-imposed restrictions in response to the pandemic have also limited the opportunity for seafarers to complete their certification and that the lack of co-ordination across industry and registered training organisations has resulted in sea time (training berths) not being effectively utilised.

The complexities and rigor of meeting sea service requirements do not allow for a one size fits all approach to addressing sea service requirements. We need to work with industry and registered training organisations to develop a model that plans for, identifies, accesses, manages, and expands the number of training berths, including consideration of the training berths and access to available training berths that will be required to support maritime projects and initiatives, such as strategic fleet. This is an area in which ISA will conduct further stakeholder consultation.

<sup>66</sup> <https://www.amsa.gov.au/qualifications-training/sea-service-and-task-books#collapseArea344> (accessed June 2023)

<sup>67</sup> <https://www.amsa.gov.au/qualifications-training/seafarer-certification-guidance-documents/guidance-international> (accessed June 2023)

<sup>68</sup> *Ibid.*

NEW  
MARITIME  
REGULATION

# MARINE ORDER 505

## D. Recent regulatory changes will require amendments to Maritime Training Package

The Australian Maritime Safety Authority (AMSA) has assumed full responsibility for a national and consistent approach to domestic commercial vessel safety, replacing a seven state and territory model. This includes a single regulatory framework for certification, construction, equipment, design, and operation of domestic commercial vessels.

A new maritime regulation known as Marine Order 505 (MO505) (Certificates of competency – National Law) for domestic commercial vessels came into effect on 1 January 2023, following industry consultation over a two-year period.<sup>69</sup> This has resulted in changes to AMSA Certificates of competency including:

- introduction of a new licensing category Coxswain Grade 3
- replacement of the Master < 35m with Master < 45m
- replacement of the Master < 80m with Master < 100m
- phasing out of Mate < 80m certificate of competency.<sup>70</sup>

In response to these changes, AMSA has requested that:

- maritime training package products be updated to reflect MO505 licensing and regulatory information
- new training package product is developed for Coxswain Grade 3 in-line with MO505.<sup>71</sup>

ISA is well placed to make changes to training package products in response to the new MO505 regulatory requirements and to support learners and RTOs.

This includes:

- updating training package products for Near Coastal job roles to reflect the new MO505 licensing and regulatory requirements
- developing a new training package product for workers to achieve the new licensing category Coxswain Grade 3 to support occupational mobility for existing workers in the maritime industry
- establishing communities of practice and work with AMSA approved providers to align their training and assessment system with MO505 requirements
- developing guidelines for AMSA approved providers to understand transition arrangements from previous updated qualifications (National Standards for Commercial Vessels) to MO505.

<sup>69</sup> <https://www.legislation.gov.au/Details/F2022L00423> (accessed 29/06/2023)

<sup>70</sup> <https://www.amsa.gov.au/about/regulations-and-standards/marine-order-505-certificates-competency-national-law> (accessed 29/06/2023)

<sup>71</sup> Australian Maritime Safety Authority Training Package changes to meet Marine Order 505 – Certificates of competency – national law (June 2023)

2023  
INTERNATIONAL  
MARITIME  
ORGANISATION  
GREENHOUSE GAS  
STRATEGY  
**NET  
ZERO**  
EMISSIONS

## E. New technology and carbon emission reduction strategies on the horizon will have skill implications in the future

The International Maritime Organisation (IMO) has adopted measures to reduce emissions of greenhouse gases from international shipping as a matter of urgency ('IMO Decarbonisation policy').<sup>72</sup> The adoption of cleaner fuels, such as liquefied natural gas (LNG), biofuels and new, low-carbon and zero-carbon fuels and technologies are being promoted by the International Maritime Organisation.<sup>73</sup>

The International Maritime Organisation Green House Gas Strategy, adopted on 7 July 2023, amended its ambitions from 50% net emissions, to zero net emissions by 2050 and this will have significant impact on the maritime industry.<sup>74</sup> This policy, as well as other policies requiring ships to report their annual operational carbon intensity indicator (CII), will accelerate the adoption of these new, low and zero-carbon fuels and new technologies.<sup>75</sup>

In response, industry has been exploring innovative ways to reduce its carbon footprint.<sup>76</sup> Several new technologies and alternative fuel technologies have been developed and are currently being trialled.<sup>77</sup>

While there is a level of uncertainty around the uptake and viability of new technologies, their implementation and internationally agreed timeframes have implications for seafarer skills and training.<sup>78</sup>

Research has shown that maritime operations will become more automated<sup>79</sup> and digitalised in the near future.<sup>80</sup> Seafarers will need to be upskilled in safety requirements, operation and maintenance of new systems, autonomous systems<sup>81</sup>, alternative fuels, and fuel technologies, as well as safety requirements to protect the community, passengers, and marine life<sup>82</sup>.

<sup>72</sup> <https://www.imo.org/en/MediaCentre/HotTopics/Pages/Cutting-GHG-emissions.aspx> (accessed July 2023)

<sup>73</sup> <https://www.amsa.gov.au/marine-environment/air-pollution/greenhouse-gas-emissions-international-shipping> (accessed August 2023)

<sup>74</sup> International Maritime Organization. (2023). 2023 IMO Strategy on Reduction of GHG Emissions from Ships - Annex 15, Resolution MEPC.337(80)

<sup>75</sup> <https://www.amsa.gov.au/marine-environment/air-pollution/short-term-measure-reduce-greenhouse-gas-emissions-existing-ships> (accessed August 2023)

<sup>76</sup> <https://www.globalmaritimeforum.org/publications/mapping-of-zero-emission-pilots-and-demonstration-projects> (accessed August 2023)

<sup>77</sup> <https://nextgen.imo.org> (accessed August 2023)

<sup>78</sup> Maritime Just Transition Taskforce. (2022). Mapping a Maritime Just Transition for Seafarers. November 79 <https://www.imo.org/en/MediaCentre/PressBriefings/pages/MASSRSE2021.aspx> (accessed June 2023)

<sup>80</sup> <https://www.imo.org/en/About/Events/Pages/Maritime-Perspectives-IMO-Singapore.aspx> (accessed June 2023)

<sup>81</sup> <https://tasdcrc.com.au/new-future-thinking-paper-autonomous-and-remotely-operated-vessels-2021-to-2040/> (accessed June 2023)

<sup>82</sup> Maritime Just Transition Taskforce. (2022). Mapping a Maritime Just Transition for Seafarers. November



Stakeholders are reporting that high levels of engagement and cross-collaboration will be required between the maritime regulator, industry, and training organisations to develop training products that address these needs.

Unclear timeframes for commercialisation of technology <sup>83</sup>, a lack of regulatory direction from the International Maritime Organisation, research and trialing being conducted predominantly overseas and slow uptake of these new technologies in Australia, means that an immediate pathway for implementation of new skills requirements is not yet clear <sup>84</sup>. However, certification and training to ensure safety standards and regulatory compliance will need to reflect the new technologies and alternative fuels which are adopted, such as hydrogen. <sup>85</sup>

We will continue to monitor these developments and review outcomes of new technology trials and member state International Maritime Organisation authorised Decarbonisation projects such as the Future Fuels and Technology for Low-and-Zero- Carbon Shipping Project <sup>86</sup>, to identify skills and training implications.

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*83 DNV. (2022). Insights into seafarer training and skills needed to support a decarbonized shipping industry.*

*84 Ibid*

*85 <https://greenvoyage2050.imo.org/alternative-marine-fuels-regulatory-mapping> (accessed June 2023)*

*86 <https://www.imo.org/en/MediaCentre/PressBriefings/pages/Future-Fuels-and-Technology.aspx> (accessed June 2023)*

# FIRST MAJOR REVIEW OF ANZSCO SINCE 2006 IS CURRENTLY UNDERWAY

## F. Data gaps

Outside of Census years, the resolution of labour force data is not high. Maritime has only two occupational categories at the 4-digit Australian and New Zealand Standard Classification of Occupations (ANZSCO) level. As a practical example, separating demand for Masters, Engineers or Officers is not straightforward since they are only available at 6-digit resolution.

The Australian Bureau of Statistics (ABS) is currently undertaking a comprehensive review of the ANZSCO to reflect the contemporary labour market, the first major review since 2006. From October to December 2023, the focus will be on occupations in water transport (Maritime industry). Industry Skills Australia will provide feedback on the accuracy of current occupation skill levels and descriptions and any occupations anticipated to emerge in the next 5 to 10 years.

The Maritime Training Package is utilised by more industries than just the maritime transport industry. Workforce data relating to marine rescue, fishing, aquaculture and other industries that utilise the Maritime Training Package are not captured in the Water Transport category. In the most recent Census, only 38%<sup>87</sup> of Maritime workers were identified as working in the Water Transport or Water Transport Support Services sectors, with the majority dispersed in various other sectors.

While qualification completions are provided in **Appendix B Training System Data** as is, observed actual completion rates (i.e., the proportion of qualifications commenced in a single year that are eventually completed) as calculated by NCVET<sup>88</sup> are not available at qualification or training package resolution.

<sup>87</sup> ABS Census 2021

<sup>88</sup> NCVET 2023, VET qualification completion rates 2022, NCVET, Adelaide

WORKFORCE  
**26.2k**

25.7% FEMALE

1.72% ABORIGINAL  
& TORRES STRAIT ISLANDER

0.56% WITH A DISABILITY

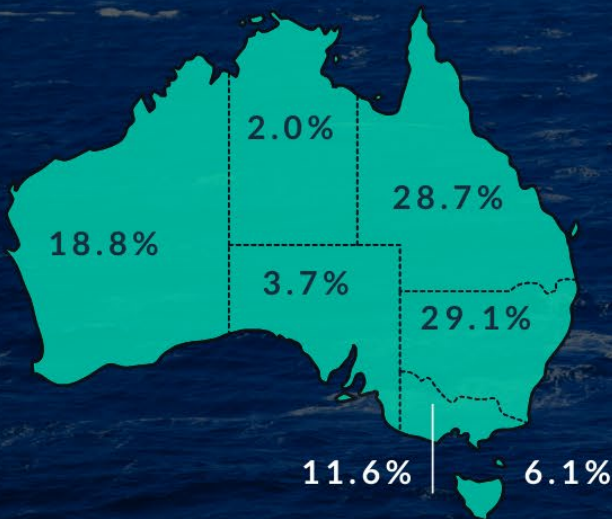
AVERAGE AGE  
**45YRS**

WORKFORCE NEARING  
RETIREMENT

**18.5%**

AGED 56-66

### WORKFORCE DISTRIBUTION



### TOP 5 OCCUPATIONS

Ship's Master - 3576

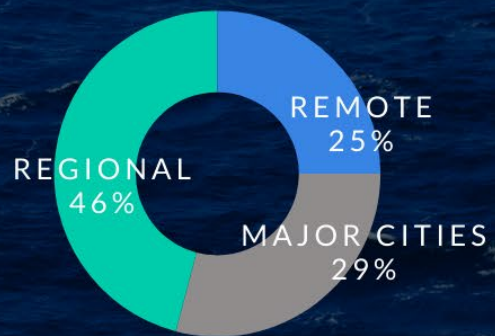
Deck Hand - 2473

Ship's Engineer - 1877

Ship's Officer - 521

Marine Surveyor - 483

### RESIDENTIAL DISTRIBUTION



WORKFORCE WITH  
VOCATIONAL EDUCATION

**52%**

2022 QUALIFICATION  
ENROLMENTS

**6117**

MARITIME TRAINING  
PACKAGE

Maritime training  
delivered by

**60**

REGISTERED TRAINING  
ORGANISATIONS

Sources  
ABS Census  
First Nations People  
Disability  
Vocational education  
Age and retirement  
Top 5 occupations

ABS Labour Force  
Workforce  
Gender  
Distribution

Other  
Residential  
distribution: JSA  
NERO  
Qualification  
enrolments: NCVER  
Training delivery:  
training.gov.au

maritime workforce

# Existing Workforce Strategies and Initiatives

Industry Skills Australia will seek to align our work with, or contribute to, existing workforce strategies and initiatives, or collaborate with those responsible for implementing them in the 2024 Workforce Plan. Below is a mapping of the workforce strategies and initiatives identified as relevant to the Maritime Industry and the key drivers and challenges outlined in this Workforce Plan. We will continue to add to this list as we consult further with industry.

Following is a key to the mapping shown in the second column of the table:

- A.** We need to be planning now for large scale projects and initiatives involving the maritime workforce
- B.** The cost of delivering AMSA certified qualifications is creating a barrier to the skills pipeline for STCW occupations
- C.** The inability to complete qualifying seagoing service to achieve AMSA certification makes it critical to start working on solutions to maximise training berths
- D.** Recent regulatory changes will require amendments to Maritime Training Package
- E.** New technology and carbon emission reduction strategies on the horizon will have skill implications in the future
- F.** Data gaps

**Table 3: Existing Workforce Strategies and Initiatives**

Strategy/Initiative	Mapping to identified driver /challenge	Jurisdiction	Owners	Purpose	Key Components/timing	Reference	Impact on Maritime workforce	How it will inform our work
<b>International Maritime Organization Decarbonisation Policy (2023 Revised IMO Strategy on Reduction of GHG Emissions from Ships) Reduction measures to be implemented from 2023 through to 2050.</b>	A, E	International/ National	International Maritime Organization (IMO)	The 2023 IMO Strategy on Reduction of GHG Emissions from Ships (the 2023 IMO GHG Strategy) represents the continuation of work by the IMO to address greenhouse gas (GHG) emissions from international shipping	2023 - 2050 <ul style="list-style-type: none"> <li>Objectives of the 2023 IMO GHG Strategy</li> <li>Short-, Mid- and Long-Term reduction measures</li> <li>Impact on member states</li> <li>Barriers, supportive actions, capacity building, technical co-operation, R&amp;D initiatives to support reduction of GHG.</li> </ul>	<a href="#">IMO's work to cut GHG emissions from ships</a>	Decarbonisation strategies will impact adoption of new technologies and biofuels, with flow-on impacts on skills and training for seafarers	As a result of this work, the IMO will establish new skills and training requirements. We will need to reflect these in cross-sectoral training products. This will require collaboration with other Jobs and Skills Councils.
<b>International Maritime Organization (2021 Outcome of the regulatory scoping exercise for the use of Maritime Autonomous Surface Vessels MASS)</b>	A, E	International/ National	International Maritime Organization (IMO)	The 2021 MASS regulatory outcome represents the continued work by the IMO to integrate new and advancing technologies in its regulatory framework	2021 - 2022 <ul style="list-style-type: none"> <li>Four degrees of autonomy</li> <li>Assessment of the existing regulatory framework and where the framework needs to address MASS operations</li> <li>Implications for the introduction of MASS operations.</li> </ul>	<a href="#">Outcome of the regulatory scoping exercise for MASS</a>	The completion of the scoping exercise is the first step, to assessing how MASS could be regulated keeping pace with technological developments	As a result of this work, the IMO has identified high-priority issues that need to be addressed to implement MASS operations including MASS terminology, definitions, remote control operations, implications for safety and technical requirements
<b>International Maritime Organization development of mandatory MASS Code MASS Code to be developed in 2025 and implemented 1st January 2028.</b>	A, E	International/ National	International Maritime Organization (IMO)	The 2022 IMO development of a goal-based instrument regulating the operation of maritime autonomous surface ships	2022 - 2025 Address common issues identified in the scoping exercise for the use of MASS including: <ul style="list-style-type: none"> <li>role of MASS master and crew; responsibilities of MASS master and crew; competencies required for MASS master and crew; identification and meaning of terms "remote operator" and "remote control station/centre".</li> </ul>	<a href="#">Working Group on MASS</a>	MASS Code will impact workforce planning for the industry with flow-on impacts on skills and training for seafarers	The final recommendations will form part of the advice going forward to the Maritime Strategic Workforce Committee to inform Maritime Workforce Plan including potential funded activities to support MASS implementation
<b>Pilbara Ports Authority</b>	C, B	Regional	Pilbara Ports Authority	Cadetship program	Established 2018 - ongoing <ul style="list-style-type: none"> <li>Approach to working with ship owners to support the cadet program</li> <li>Model of training and incorporation of sea time/training berths</li> <li>Work experience plan</li> <li>Attraction and selection of cadets.</li> </ul>	<a href="#">Pilbara Ports Authority Marine Cadet Framework</a>	Identification of key characteristics that facilitates successful cadet outcomes	Learnings from this model will inform a best practice model to maximise training berths

Strategy/Initiative	Mapping to identified driver /challenge	Jurisdiction	Owners	Purpose	Key Components/timing	Reference	Impact on Maritime workforce	How it will inform our work
<b>Maritime Industry Australia Ltd (MIAL) and Australian Resources &amp; Energy Employers Association (AREEA) industry workshop 2023</b>	A, B, C, E, F	-	Maritime Industry Australia Ltd (MIAL) and Australian Resources & Energy Employers Association (AREEA)	Consolidate the views of a collection of end user industries under the general agreement that Australia faces a significant issue in accessing critical maritime skills	2023 Discussions focusing on: <ul style="list-style-type: none"> <li>• medium- and long-term workforce demands</li> <li>• end users of seafarer skills</li> <li>• key challenges faced by stakeholders</li> </ul>	-	Information and key insights from stakeholders collected at the MIAL and AREEA workshop will be included in a report to be released in August/September 2023	The final report and its findings will form part of the advice going forward to the Maritime Strategic Workforce Committee to inform the 2024 Maritime Industry National Workforce Plan
<b>Maritime Just Transition Taskforce and DNV (Det Norske Veritas)</b>  <b>International study</b>	A, E	International/ National	Det Norske Veritas (DNV)	Initial assessment of the impacts decarbonization of the international shipping industry will have on crewmembers.	Just in Time Transition Taskforce established 2021 - ongoing <ul style="list-style-type: none"> <li>• DNV modelling based on 2018 IMO GHG approach</li> <li>• Safety challenges related to alternative fuels in shipping</li> <li>• Challenges of implementing training to meet skill requirements.</li> <li>• Skill and training requirements.</li> </ul>	<a href="#">Seafarer training and skills for decarbonised shipping</a>	Model could be used to inform how we identify skills seafarers need and challenges that need to be taken into consideration when developing training package products and implementation.	Provides an insight into the safety and technical skill requirements for seafarers and challenges in the implementation of skills requirements.
<b>Maritime Strategic Fleet Taskforce 2022</b>  <b>Outcomes pending</b>	A	National	Australian Government	Australian Government has committed to establishing a maritime strategic fleet of Australian flagged and crewed vessels.	Established 2022 - ongoing <ul style="list-style-type: none"> <li>• Strategic need</li> <li>• Future freight and shipping need</li> <li>• Benefits of strategic fleet</li> <li>• Disruptions and impact on supply chains</li> <li>• Composition of the fleet</li> <li>• Financial arrangements</li> <li>• Regulatory framework</li> </ul>	<a href="#">Maritime strategic fleet</a>	Recommendations of the strategic fleet will impact workforce planning for the industry with flow-on impacts on skills and training for seafarers.	The final recommendations will form part of the advice going forward to the Maritime Strategic Workforce Committee, to inform Maritime Workforce Plan, including potential funded activities to support strategic fleet implementation.
<b>Fee-Free TAFE</b>	B	National	Australian Government in partnership with state and territory governments	To address skills shortages and delivery fee-free TAFE and vocational education places for students wanting to train, retrain or upskill.	2023 <ul style="list-style-type: none"> <li>• \$1 billion 12-month Skills Agreement to deliver 180,000 Fee-Free TAFE and vocational educational places from January 2023.</li> <li>• additional \$414.1 million will be committed for a further 300,000 TAFE and vocational educational courses to be made fee-free from Jan 2024 is currently in negotiation.</li> </ul> National priorities include: <ul style="list-style-type: none"> <li>• sovereign capability</li> <li>• First Nations Australians</li> <li>• young people (17-24)</li> <li>• people who are out of work or receiving income support payments</li> <li>• women undertaking study in non-traditional fields.</li> <li>• certain categories of visa holders.</li> </ul>	<a href="#">Fee-Free TAFE</a>	Fee Free TAFE in partnership with States and Territories have provided funding for the development of maritime skills.	The summary of funded initiatives will form part of the advice on funded pathways for maritime to the Maritime Strategic Workforce Committee to inform 2024 Maritime Industry National Workforce Plan.

Strategy/Initiative	Mapping to identified driver /challenge	Jurisdiction	Owners	Purpose	Key Components/timing	Reference	Impact on Maritime workforce	How it will inform our work
<b>Australian Department of Industry, Science and Resources</b>	A	National	Australian government	To develop a roadmap that outlines approaches to building an Australian decommissioning industry.	13 September to 20 October 2023 The roadmap will: <ul style="list-style-type: none"> <li>cover offshore decommissioning in Commonwealth waters</li> <li>identify what happens when that property comes onshore for processing and recycling</li> <li>will focus on making sure decommissioning activity in Australia occurs in a way that is safe, cost-effective and environmentally sound.</li> </ul>	<a href="#">Roadmap to establish an Australian decommissioning industry</a>	Roadmap will examine how existing offshore resources, workers in related industries, women and First Nations people can be attracted and retained by the industry and access training.	Interim reports will provide an insight into the workforce challenges and skills requirements.  The final report and its findings will form part of the advice going forward to the Maritime Strategic Workforce Committee to inform the 2025 Maritime Industry National Workforce Plan
<b>Marine Order 505 – Certificates of competency – national law</b>	D	National	Australian government	Outlines changes to AMSA certification framework and guidelines for Near Coastal job roles.	Effective as of 1 January 2023 - ongoing Marine Order 505 includes: <ul style="list-style-type: none"> <li>AMSA certificates of competency that can be issued</li> <li>application requirements for a certificate of competency</li> <li>criteria which AMSA uses to issue a certificate of competency</li> <li>conditions on a certificate of competency</li> <li>requirements for renewal of certificate.</li> </ul>	<a href="#">Marine Order 505 (Certificates of Competency national law) 2022</a>	Marine Order outlines the changes to AMSA certificates of competency which includes the introduction of 5 new certificates of competency, phasing out of old certificates of competency and supervisory changes for the job role of General Purpose Hand.	Marine Order 505 forms the basis for the proposed changes to the Maritime Training Package products.

# Appendix A Maritime Occupational Areas

Industry Skills Australia acknowledges that the ANZSCO codes used by the VET system to identify occupations in the Maritime industry do not always align with the way in which the industry describes itself.

The table below describes job roles in terms that industry will recognise. We have developed this framework as a starting point to assist in conversations with industry stakeholders and will further refine it over time in collaboration with the Strategic Workforce Planning Committees.

Occupational Area	Job Role
Navigation	Master Unlimited, Master < 3000 GT, Chief Mate < 3000 GT, Master < 500 GT, Mate < 500 GT, Chief Mate, Watchkeeper Deck.
	Master < 100 metres Near Coastal (NC)
	Master < 45 metres NC, Master < 24 metres NC, Master (Inland waters) NC.
	Coxswain Grade 3 NC, Coxswain Grade 2 NC, Coxswain Grade 1 NC
Engineering	Engineer Class 1 (Steam and Motor), Engineer Class 1 (Steam), Engineer Class 1 (Motor), Electro-Technical Officer, Engineer Watchkeeper, Engineer Class 2
	Engineer Class 3 NC
	Marine Engine Driver Grade 3 NC, Marine Engine Driver Grade 2 NC, Marine Engine Driver Grade 1 NC.
Deck Operations	Chief Integrated Rating, Integrated Rating, Able Seafarer - Deck, Able Seafarer - Engine, Navigational Watch Rating, Engine Room Watch Rating
	Marine Cook
	General Purpose Hand
Support Operations	Linesperson
	Vessel Traffic Services Operator
	Marina Assistant
Autonomous Operations	Autonomous Surface Vehicles (ASV) Operator, Autonomous Underwater Vessels (AUV) Operator, ASV Technician, AUV Technician in Near Coastal waters.

# Appendix B Training System Data

## Qualification Enrolments

Qualification	2018	2019	2020	2021	2022
MAR10220 Certificate I in Maritime Operations (General Purpose Hand Near Coastal)	777	981	779	669	841
MAR10418 Certificate I in Maritime Operations (Coxswain Grade 2 Near Coastal)	457	431	352	489	514
MAR20121 Certificate II in Maritime Operations (Linesperson)	49	19	2	0	0
MAR20321 Certificate II in Maritime Operations (Coxswain Grade 1 Near Coastal)	1499	1780	1492	2009	2370
MAR20421 Certificate II in Maritime Operations (Marine Engine Driver Grade 3 Near Coastal)	204	182	127	153	165
MAR30022 Certificate III in Vessel Traffic Services	0	0	0	0	0
MAR30122 Certificate III in Marina Operations	23	2	0	5	2
MAR30220 Certificate III in Maritime Operations (Integrated Rating)	58	94	100	54	82
MAR30320 Certificate III in Maritime Operations (Marine Cookery)	2	1	2	0	2
MAR30821 Certificate III in Maritime Operations (Marine Engine Driver Grade 2 Near Coastal)	573	693	745	701	792
MAR30921 Certificate III in Maritime Operations (Master up to 24 metres Near Coastal)	858	890	952	911	943
MAR31021 Certificate III in Maritime Operations (Master Inland Waters)	2	10	2	0	4
MAR31222 Certificate III in Autonomous Maritime Systems	0	0	0	0	0
MAR40121 Certificate IV in Maritime Operations (Chief Integrated Rating)	0	0	0	0	0
MAR40220 Certificate IV in Maritime Operations (Marine Engine Driver Grade 1 Near Coastal)	56	65	23	58	80
MAR40320 Certificate IV in Maritime Operations (Master up to 45 metres Near Coastal)	191	187	232	198	187
MAR50120 Diploma of Marine Engineering	45	42	41	53	52
MAR50320 Diploma of Maritime Operations	38	53	18	16	17
MAR60120 Advanced Diploma of Marine Engineering (Class 1)	28	14	30	19	32
MAR60220 Advanced Diploma of Maritime Operations (Master Unlimited)	67	24	13	13	5
<b>Grand Total</b>	<b>4927</b>	<b>5468</b>	<b>4910</b>	<b>5348</b>	<b>6088</b>

Note: enrolment numbers include all versions of the qualification across the years they were available (e.g. MAR10220 Certificate I in Maritime Operations (General Purpose Hand Near Coastal) includes enrolments for MAR10313, MAR10220, MAR10318 and MAR10120.)



## Qualification Completions

Qualification	2018	2019	2020	2021	2022
MAR10220 Certificate I in Maritime Operations (General Purpose Hand Near Coastal)	552	645	638	563	667
MAR10418 Certificate I in Maritime Operations (Coxswain Grade 2 Near Coastal)	408	503	340	474	452
MAR20121 Certificate II in Maritime Operations (Linesperson)	6	50	13	10	0
MAR20321 Certificate II in Maritime Operations (Coxswain Grade 1 Near Coastal)	1173	1132	1165	1385	1461
MAR20421 Certificate II in Maritime Operations (Marine Engine Driver Grade 3 Near Coastal)	167	164	107	125	124
MAR30022 Certificate III in Vessel Traffic Services	0	0	0	0	0
MAR30122 Certificate III in Marina Operations	0	4	0	0	0
MAR30220 Certificate III in Maritime Operations (Integrated Rating)	22	26	28	25	35
MAR30320 Certificate III in Maritime Operations (Marine Cookery)	7	1	0	0	0
MAR30821 Certificate III in Maritime Operations (Marine Engine Driver Grade 2 Near Coastal)	530	601	608	644	675
MAR30921 Certificate III in Maritime Operations (Master up to 24 metres Near Coastal)	688	645	687	782	759
MAR31021 Certificate III in Maritime Operations (Master Inland Waters)	7	8	1	0	2
MAR31222 Certificate III in Autonomous Maritime Systems	0	0	0	0	0
MAR40121 Certificate IV in Maritime Operations (Chief Integrated Rating)	0	0	0	0	0
MAR40220 Certificate IV in Maritime Operations (Marine Engine Driver Grade 1 Near Coastal)	55	50	15	45	82
MAR40320 Certificate IV in Maritime Operations (Master up to 45 metres Near Coastal)	165	164	170	157	162
MAR50120 Diploma of Marine Engineering	45	37	32	44	52
MAR50320 Diploma of Maritime Operations	28	22	20	16	13
MAR60120 Advanced Diploma of Marine Engineering (Class 1)	21	14	16	18	15
MAR60220 Advanced Diploma of Maritime Operations (Master Unlimited)	25	16	12	5	5
<b>Grand Total</b>	<b>3899</b>	<b>4082</b>	<b>3852</b>	<b>4293</b>	<b>4504</b>

## Number of RTOs scoped to deliver Maritime Qualifications<sup>89</sup>

Qualification	RTO count
MAR10220 Certificate I in Maritime Operations (General Purpose Hand Near Coastal)	26
MAR10418 Certificate I in Maritime Operations (Coxswain Grade 2 Near Coastal)	26
MAR20121 Certificate II in Maritime Operations (Linesperson)	1
MAR20321 Certificate II in Maritime Operations (Coxswain Grade 1 Near Coastal)	37
MAR20421 Certificate II in Maritime Operations (Marine Engine Driver Grade 3 Near Coastal)	22
MAR30022 Certificate III in Vessel Traffic Services	0
MAR30122 Certificate III in Marina Operations	1
MAR30220 Certificate III in Maritime Operations (Integrated Rating)	3
MAR30320 Certificate III in Maritime Operations (Marine Cookery)	1
MAR30821 Certificate III in Maritime Operations (Marine Engine Driver Grade 2 Near Coastal)	24
MAR30921 Certificate III in Maritime Operations (Master up to 24 metres Near Coastal)	26
MAR31021 Certificate III in Maritime Operations (Master Inland Waters)	3
MAR31222 Certificate III in Autonomous Maritime Systems	0
MAR40121 Certificate IV in Maritime Operations (Chief Integrated Rating)	0
MAR40220 Certificate IV in Maritime Operations (Marine Engine Driver Grade 1 Near Coastal)	10
MAR40320 Certificate IV in Maritime Operations (Master up to 45 metres Near Coastal)	17
MAR50120 Diploma of Marine Engineering	5
MAR50320 Diploma of Maritime Operations	5
MAR60120 Advanced Diploma of Marine Engineering (Class 1)	3
MAR60220 Advanced Diploma of Maritime Operations (Master Unlimited)	2

<sup>89</sup> Training.gov.au (as at 05 Sept 2023)

# Appendix C Glossary of Terms

**AMSA Certification** – is AMSA certification of competency which includes the achievement of an approved program of study that meets the relevant STCW regulations (eg. Diploma of Maritime Operations – Master less than 500 GT) and qualifying sea service as defined in Marine Orders.

**Gap analysis** - The process of quantifying and identifying the difference between current workforce and skills needs and what will be required into the future.

**Labour shortage** - Where the demand for unskilled labour (entry level or otherwise) is greater than the supply of those available and willing to work under existing industry conditions

**Registered Training Organisation** - Organisations that are approved by ASQA, WA TAC or VRQA to deliver nationally recognised training in the VET sector

**Reskilling** - Involves learning new skills outside of workers' existing skillset which are often closely adjacent to their current function, but can be geared toward a different path entirely

**Skill Set** - A single unit of competency or a combination of units of competency from a training package that link to a licensing or regulatory requirement, or a defined industry need

**Skill shortage** – where the demand for specific skills (or knowledge) is greater than available within the current workforce

**Skilled labour shortage** - Where the demand for employees in specific occupations is greater than the supply of those who are qualified, available and willing to work under existing industry conditions

**Training Provider** - Any organisation or individual providing education or training services

**Upskilling** - Undertaking learning to expand one's existing skill set. Upskilling enhances workers' performance in their current role, potentially advancing them along their career path

**Workers** - The term refers to occupational data (ANZSCO)

**Workforce development** - Design or delivery of initiatives to build the skills and capability of the workforce. May include but is not limited to: skills audits and skills analyses; on or off-the-job training; skills recognition; recruitment, job design and career pathways; assessment and evaluation.

**Workforce Plan** - The repeated, systematic and cyclical identification, analysis and planning of workforce skill needs at the enterprise (micro) or sector/region (meso) or whole of industry/economy (macro) level

**Workforce Planning** - Analysis, research and strategies to identify, forecast and respond to the current, emerging and future workforce challenges and opportunities

**Workforce** - The term refers industrial data (ANZSIC).

# Appendix D Explanatory Notes to Data

## Occupational data (Workers) vs Industrial data (Workforce)

When analysing the workforce and industry data in Australia, two classifications are commonly used: ANZSCO and ANZSIC.

- ANZSCO (Australian and New Zealand Standard Classification of Occupations) categorises occupations based on skill level and specialisation.
- ANZSIC (Australian and New Zealand Standard Industrial Classification) classifies businesses into industry sectors. This groups companies based on the primary activities they are engaged in.

In simple terms, ANZSCO is about what people do in their jobs, and ANZSIC is about the industry or sector where businesses operate. They are used for different purposes and are not directly comparable.

In this document, we use the term 'Workers' when referring to occupational data (ANZSCO) and industry 'Workforce' when referring to industrial data (ANZSIC).

## Business Count

In the Counts of Australian Businesses data, industries are classified by the main industry linked to a business ABN. This method has limitations. Firstly, businesses operating in several States/Territories are counted only once, making enterprise figures appear low in some areas. This does not mean that there are no enterprises in those regions; rather, that their headquarters are located elsewhere. Secondly, if an organisation operates in multiple industries, it is only counted in one, leading to potential inaccuracies in industry classification.

## Training Data

Total VET Activity (TVA) data is collected from all types of RTOs and not only those in receipt of Commonwealth or State funding.

## Endnotes/Special References

† Scenic and Sightseeing Transport is an industrial category that covers all transport modes, and the workforce is split proportionately among the transport sectors.

\* Future Demand was calculated by the National Skills Commission who was responsible for producing the Skills Priority List (SPL) 2022

# Disability data is not available in Census year 2006



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