Industry Skills Australia

Rail Industry

2025 Workforce Plan

JSC | Jobs and Skills Council
Transport and Logistics
An Australian Government Initiative

About ISA

Industry Skills Australia (ISA) has been established as the Jobs and Skills Council (JSC) for the Transport Supply Chain industries, 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 JSC 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 almost 30 years of history with Transport Supply Chain industries
- 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.

Industry Skills Australia acknowledges and thanks those organisations who supplied images to be used in this Workforce Plan. Alstom on pages 21, 47, Aurizon on pages 1, 25, 69, Australian Rail Track Corporation on pages 29, 33, Metro Trains Melbourne on page 26, Patrick Terminals on page 10, Public Transport Authority of WA on pages 12-15, TasRail on page 19, Training Ahead Australia on pages 5, 8-9, 20, Seymour Heritage Railway Centre on page 20, Transport for NSW on pages 11, 30. Queensland Rail on pages 31, 32, 40, Southern Shorthaul Railroad on page 50.

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About the **Workforce** Plan

Purpose

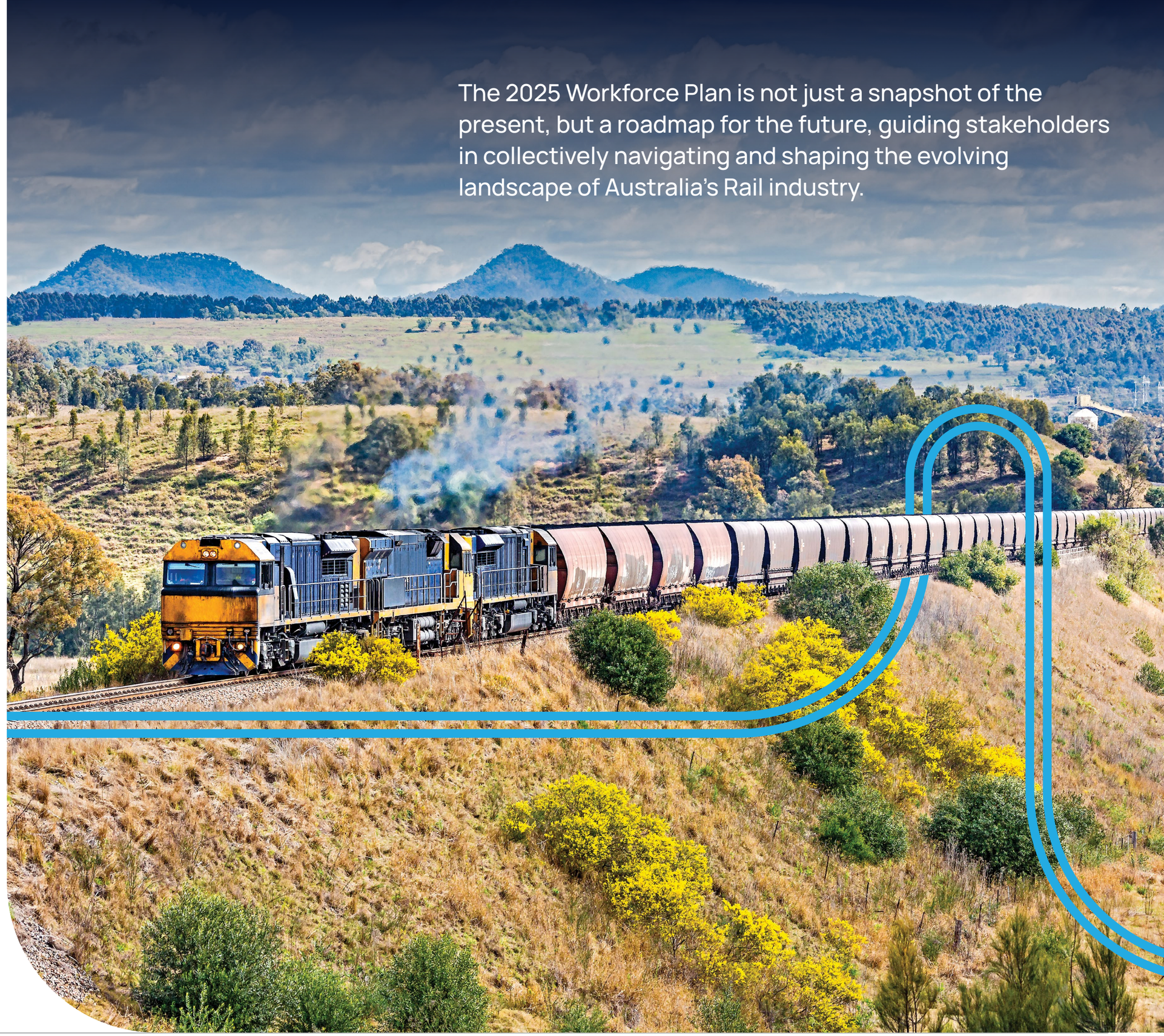
Workforce Planning is the strategic centrepiece for Jobs and Skills Councils to inform and establish each of their other functions. The Workforce Plan serves as a guide to identifying the contemporary drivers and challenges within Australia's Rail industry and developing forward-thinking actions to address those challenges. Drawing upon a rich blend of data sources, including industry reports, stakeholder consultation and the direction from our Strategic Workforce Planning Committee, it outlines the current obstacles impeding the industry's progress and proposes practical actions to overcome these hurdles.

The Workforce Plan begins the groundwork for ongoing evaluation and strategy refinement. It aims not only to diagnose current challenges but also to anticipate future trends and opportunities. This proactive approach ensures that the Australian Rail industry remains agile and responsive to changing conditions.

A crucial aspect of this document is its collaborative nature, emphasising the value of stakeholder input. By incorporating diverse perspectives from industry experts, policy makers, and practitioners, the strategies presented are both robust and attuned to the real-world dynamics of the Rail industry.

The Workforce Plan will serve as a dynamic tool for ongoing stakeholder engagement to maintain a deep understanding of current, emerging, and future workforce challenges and opportunities, and inform annual iterations of the Plan. This engagement will help identify skills gaps and shortages across the Transport Supply Chain, including in small, niche, and regional sectors. Collaboration with Jobs and Skills Australia will also provide employment outlooks for each industry sector. These insights will enable a proactive and well-informed approach to workforce planning and the development of targeted strategies to address key industry challenges.

The 2025 Workforce Plan is not just a snapshot of the present, but a roadmap for the future, guiding stakeholders in collectively navigating and shaping the evolving landscape of Australia's Rail industry.



Foreword

I am pleased to present the 2025 Workforce Plan for Australia's Rail Industry, prepared by Industry Skills Australia and overseen by the Rail Strategic Workforce Planning Committee.

The Committee brings together passionate and experienced Rail industry leaders to shape the annual Workforce Plan through rigorous research, analysis, and proactive consultation with stakeholders. We have engaged with public and private rail operators, track owners and managers, unions and government, and training and education stakeholders to explore and analyse current challenges facing the industry and identify action that is needed from industry, government and the national skills system.

Our industry is an integral part of the Australian economy and supply chain. We provide mobility to millions of passengers and deliver vital freight services across the country. To keep the industry on track at a time of unprecedented investment in rail networks, it is critical that we understand and anticipate future workforce challenges and emerging skill needs.

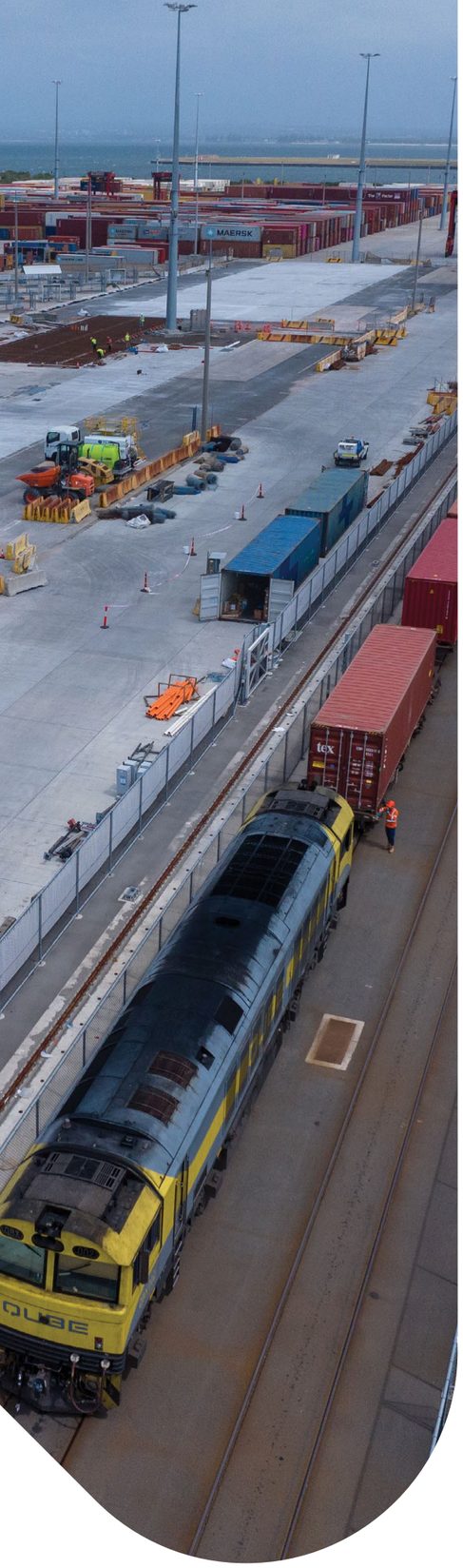
The 2025 Workforce Plan sets out a series of interrelated challenges and drivers of change for the industry. First among these is a nationwide shortage of workers for critical rail occupations. Enhancing the appeal of the industry to attract young and diverse talent will be essential to offset an expected wave of retirements over the next decade. At the same time, new technical skills are needed in the workforce to operate and maintain the digital and automated technologies that are being deployed across rail networks, and to combat the emerging potential of cyber security threats. A lack of interoperability in Australia's rail networks also continues to hamper nationally consistent approaches to training and impede labour mobility.

It is challenging for rail operators and track owners to develop, deliver and maintain the training and development pathways into the industry. To address the identified challenges and capitalise on future opportunities, current gaps in rail training capacity must be addressed to give the industry access to better training facilities and more qualified trainers.

Through the identification of proposed actions, the 2025 Workforce Plan provides Industry Skills Australia and Rail industry stakeholders with a way forward for addressing priority areas through collaborative action.

Brian Appleby
Chair, Rail Strategic Workforce Planning Committee

Thank you to all stakeholders who contributed intelligence, insights and ideas to the 2025 Workforce Plan. We look forward to continuing our work with you to collectively shape the future of our industry.



Executive Summary

The Rail industry in Australia provides vital freight services across the country and mobility to millions of metropolitan and regional passengers. The industry comprises private and public operators, passenger and freight operators, rail infrastructure owners and managers, manufacturers, and suppliers that operate in urban, regional and rural areas of Australia. Rail industry activities can be categorised into four occupational areas:

Rail Operations | **Rail Infrastructure**[1] | **Safety** | **Rolling Stock Maintenance**

The Australian Rail industry currently employs over 50,000 people and the workforce is expected to grow by 8.7% over the next decade[2]. By identifying and analysing the key factors that impact the supply and demand of workers in the Rail industry, the Workforce Plan can assist government, industry and organisations to better understand workforce issues and develop and implement potential solutions.

The **Key Challenges and Drivers** section of the Workforce Plan explores the current labour market dynamics and workforce challenges that are influencing the supply and demand for workers in the Rail industry. Extensive research and stakeholder consultation has found that:

- Industry faces critical occupational and skills shortages
- Rail organisations struggle to attract young and diverse talent
- Lack of rail interoperability hampers labour mobility
- New skills needed to address technical changes
- Rail training capacity falls short of industry demands
- Skills gaps for cyber security threats
- New skills demands rise as rail shifts to clean energy.

The 2025 Workforce Plan has been informed by ongoing engagement with stakeholders to gather workforce intelligence and inform evidence based and industry supported actions. The development of annual Workforce Plans allows the Rail industry to continuously refresh and deepen understanding of the factors that influence workforce supply and demand, and ensure the development of strategic responses.

This plan also identifies a number of related **existing workforce strategies and initiatives** and maps the challenges and drivers to them. Where relevant, the 2025 Workforce Plan will seek to align with, or contribute to, these strategies and initiatives, or collaborate with those responsible in implementing them.

[1] Note: The Transport and Logistics Jobs and Skills Council does not cover electrical rail signalling, all manufacturing and infrastructure construction. These areas fall under the coverage of other Jobs and Skills Councils.

[2] Jobs and Skills Australia. Employment projections produced May 2024 to May 2034.

Summary of actions

The actions in the Workforce Plan have been developed and designed to address some of the key industry challenges and drivers as a priority. Each action is a high-level description of a project and will be fully scoped, planned and implemented in consultation with relevant stakeholders. These include:

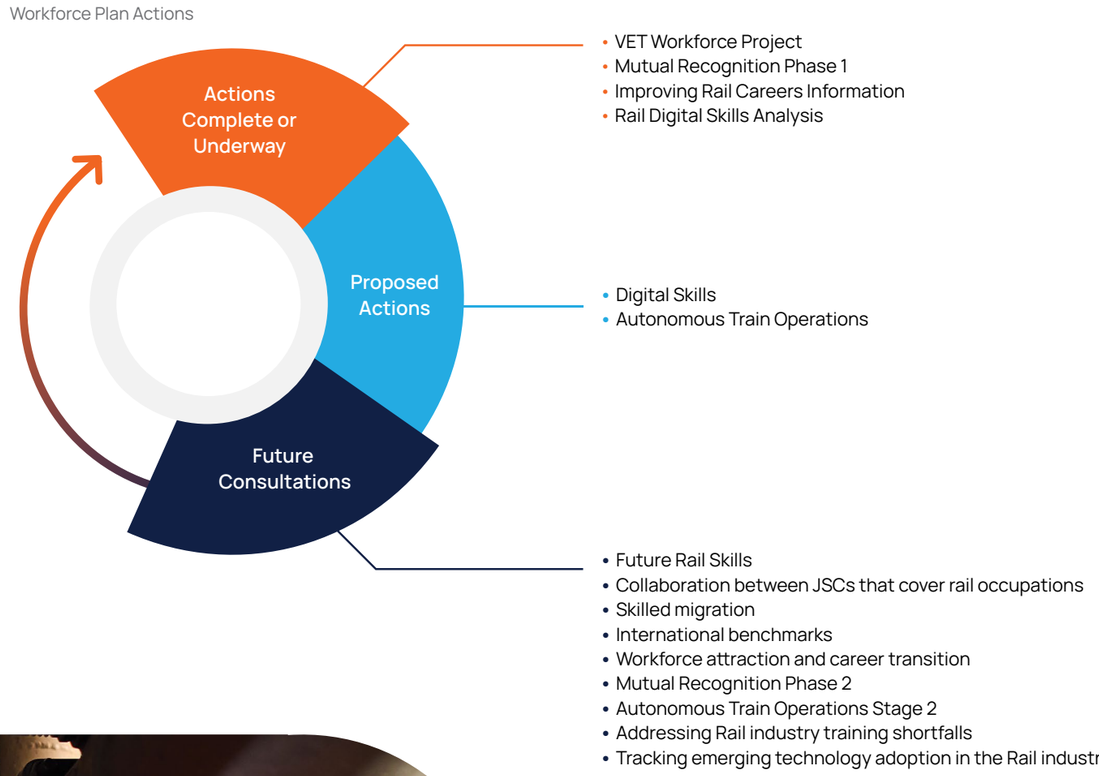
Industry Challenge/Driver	Proposed Actions
New skills needed to address technical changes	**Digital Skills -** Using DigComp 2.2 as the Digital Framework to review digital skills for a selected number of occupations in our industries. **Autonomous Train Operations** - Identify and benchmark autonomous train operations practices and existing skills gaps.

Industry Challenge/Driver	Actions Complete or Underway
Rail training capacity falls short of industry demands	**VET Workforce Project** - ISA is undertaking a project to support the growth and sustainability of the VET workforce in Australia. The project will concentrate on vocational education providers in the transport sectors (Aviation, Maritime, Rail and Transport and Logistics) to complement and contribute to the opportunities and actions included in the VET Workforce Blueprint.
Lack of rail interoperability hampers labour mobility	**Mutual Recognition Phase 1** - To support the interoperability and labour mobility of workers to implement the Mutual Recognition Blueprint from the National Transport Commission.
Rail organisations struggle to attract young and diverse talent	**Improving Rail Careers Information** - This initiative develops a comprehensive repository of career information on specific occupations.
New skills needed to address technical changes	**Rail Digital Skills Analysis -** Using a digital framework to analyse digital skills required for selected Rail occupations.

Summary of future consultation

The Future Consultation activities identified in this Workforce Plan will be used to inform challenges and drivers in the 2026 Rail Workplace Plan and potential workforce actions. These include:

Industry Challenge/Driver	Proposed Further Consultation
Industry faces critical occupational and skills shortages	• Future Rail Skills • Collaboration between JSCs that cover rail occupations • Skilled migration • International benchmarks
Rail organisations struggle to attract young and diverse talent	• Workforce attraction and career transition
Lack of rail interoperability hampers labour mobility	• Mutual Recognition Phase 2
New skills needed to address technical changes	• Autonomous Train Operations Stage 2
Rail training capacity falls short of industry demands	• Addressing Rail industry training shortfalls
Skills gaps for cyber security threats	• Collaboration opportunities with industry, TAFEcyber and other JSCs
New skills demands rise as rail shifts to clean energy	• Tracking emerging technology adoption in the Rail industry



Industry Overview

The Rail industry is critical to Australia's economy, society, and environment, providing mobility to millions of passengers and vital freight services across the country with over 31,000 kilometres of track[3]. With a presence in every major metropolitan and most regional areas of Australia, the Rail industry is a significant contributor to the national economy and generated an estimated annual revenue of $23.6 billion in 2023-24[4].

Rail industry activities can be categorised into four occupational areas:

Rail Operations – managing, operating, co-ordinating and supporting services for rail vehicles.

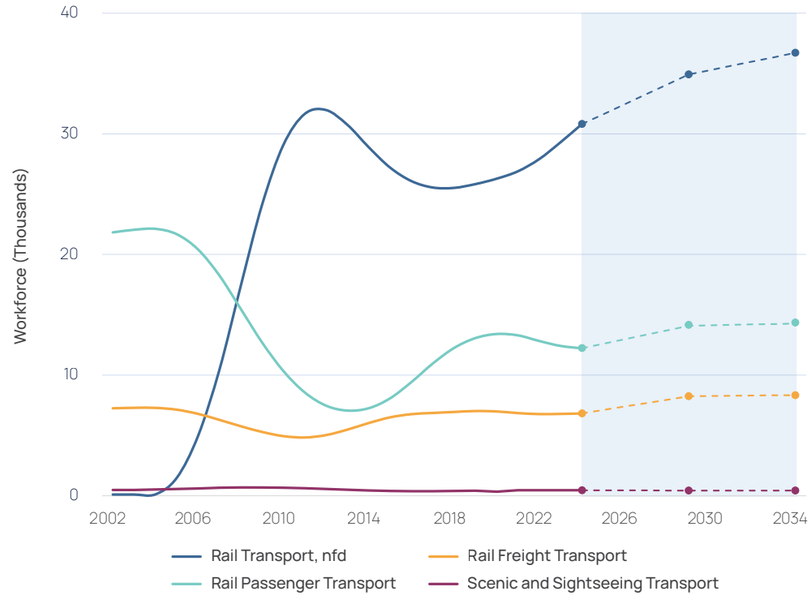
Rail Infrastructure – managing and maintaining rail infrastructure, which includes tracks, signals, stations, yards, and other supporting facilities.

Safety – implementing safety protocols, conducting regular inspections and maintenance, and training personnel on emergency, human factors and fatigue procedures to ensure the safety of passengers, workers and rail infrastructure.

Rolling Stock Maintenance – conducting maintenance of any vehicle that operates on or uses rail. Rolling stock is a collective term for various types of rail vehicles including locomotives, freight wagons, passenger cars, track machines and road-rail vehicles.

Over 50,000 people were employed in the Rail industry in 2024, and the workforce is projected to increase by 4.9% in the five years to May 2029 and 8.7% to May 2034 (**Figure 1**). The median age of Railway Track Workers, and Train and Tram Drivers in 2024 were 41 and 42 years[5] respectively, with women making up 11.8% of Rail workers in 2024[6].

Figure 1: Rail Industry Workforce 2002-2034



Source: JSA Labour Force Trending (Nov 2024), JSA Employment Projections (2024 to 2034)

THE RAIL WORKFORCE WILL

grow 8.7% by 2034

The Rail industry comprises private and public operators, passenger and freight operators (including resource companies that build, own and operate dedicated rail infrastructure), rail infrastructure owners and managers, manufacturers and suppliers that operate in urban, regional, and rural areas of Australia[7]. The industry also employs or contracts people from peripheral industries when required, including but not limited to, civil construction, engineering and labour hire companies.

Given the broad range of entities that make up the Rail industry, rail is overseen by the Office of the National Rail Safety Regulator (ONRSR). ONRSR is an independent body that has regulatory oversight and accountability to encourage and enforce safe railway operations and promote and improve national rail safety.

3 Bureau of Infrastructure and Transport Research Economics (BITRE). (2023, Yearbook 2023). Australian Infrastructure and Transport Statistics, Statistical Report

4 IBISWorld Industry Wizard (November 2024)

5 Jobs and Skills Australia. Occupation profiles data - November 2024

6 Australian Bureau of Statistics, Detailed Labour Force Survey, EQ08 - Employed persons by Occupation unit group of main job, November 2024 (annual average of original data)

7 Note: ISA does not cover electrical rail signaling, rail manufacturing and infrastructure construction. These areas fall under the coverage of other Jobs and Skills Councils.

RAIL BUSINESS NO.

332

18	14	300
with 200+ employees	with 20-199 employees	with 0-19 employees

RAIL PASSENGER JOURNEYS IN 2021-22

467 MILLION

KILOMETRES OF TRACK

31,000

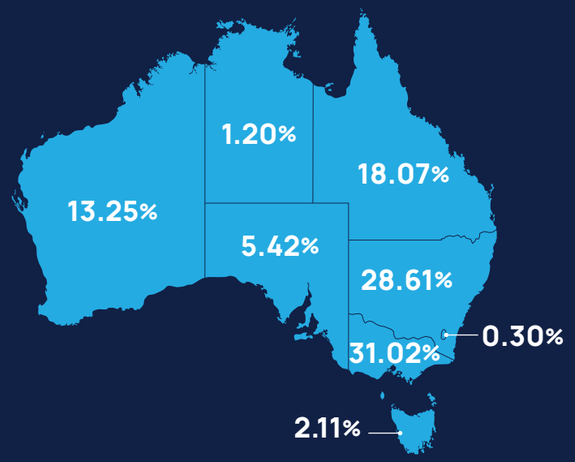
RAIL INFRASTRUCTURE MANAGERS

8

RAIL INDUSTRY ESTIMATED ANNUAL REVENUE $B 2023-24

23.6

BUSINESS DISTRIBUTION BY STATE %



RAIL INFRASTRUCTURE BUILT $B 2022-2023

12.3

GDP CONTRIBUTION $B 2024

11.33

RAIL OPERATORS INCLUDING FREIGHT & PASSENGERS

>50

RAIL NETWORKS

18 separate rail networks

11 different signalling systems

MEDIAN AGE

46

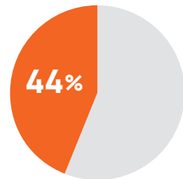
WORKFORCE‡

54,581

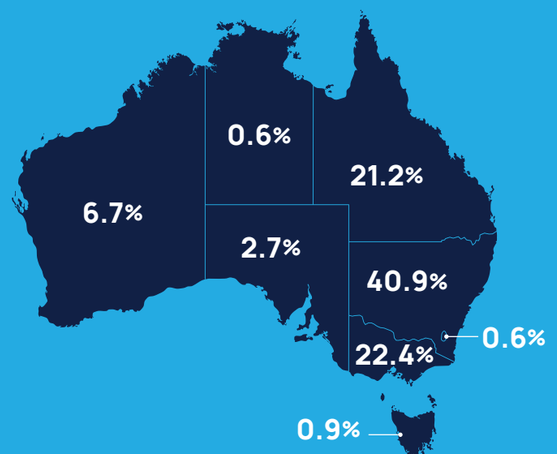
REGISTERED TRANING ORGANISATIONS (RTO)

141

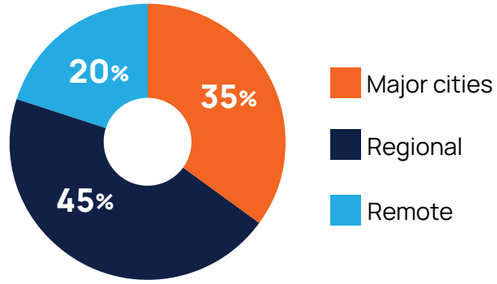
WORKERS WITH VOCATIONAL EDUCATION



WORKFORCE DISTRIBUTION



RESIDENTIAL DISTRIBUTION OF WORKERS



QUALIFICATION ENROLMENTS 2023

22,222

WORKFORCE NEARING RETIREMENT (AGED 56-66)

18.5%

TOP 5 OCCUPATIONS

1	Train Driver	11198
2	Railway Track Worker	4757
3	Tram Driver	1591
4	Train Controller	1263
5	Railway Signal Operator	1203

See page 69 for sources

See page 69 for sources

Key **Challenges** and **Drivers**

A. Industry faces critical occupational and skills shortages

The Australian Rail industry is facing significant workforce capability challenges with shortages in many key occupations. At a time of unprecedented investment in rail networks, there is a risk that the industry may not have the capacity to build and operate the new infrastructure due to existing challenges in the recruitment and retention of workers.[8]

Industry has reported that the uncertainty in infrastructure project timelines, caused by construction delays and cost escalations in existing and planned projects, creates an additional challenge for workforce planning.

Occupational shortages are a challenge in operational, engineering, technical and training roles

Australia's Rail industry is facing growing occupational shortages, with key roles such as train drivers, controllers and track workers increasingly in demand. Initially affecting specific states, shortages have expanded nationwide, particularly from 2023 onwards (**Table 1**). Industry consultation has identified additional rail occupations in shortage, including signalling engineers and technicians, maintenance workers, electrical technicians, tunnellers, and trainers and assessors. In ISA's 2025 survey, respondents advised that increased shortages and complications in forecasting are increasing workload strain and fatigue caused by covering staffing shortfalls. Further, employers noted the additional strain leads to ineffective workforce planning and an increase in outsourcing requirements.

Table 1: Rail Occupations in Shortage by State/Territory

Occupation title	2021	2022	2023	2024
Railway Signal Operator	VIC	WA	QLD, WA	NSW
Railway Station Manager	VIC			
Railway Track Plant Operator	NSW	AUST	AUST	AUST
Railway Track Worker	VIC	VIC	AUST	AUST
Train Controller	AUST	WA	AUST	AUST
Train Driver	AUST	WA	AUST	AUST
Tram Driver			AUST	AUST
Travel Attendants nec				NSW

Source: Occupational Shortage List (14 February 2025)
AUST: All States and Territories

[8] Australasian Railway Association. (2022). Addressing skills and resource challenges in the rail industry

The National Transport Commission's Future Skills Framework[9] has identified 16 critical rail roles (**Table 2**) needed over the next five years to address workforce challenges and technological advancements.

Table 2: Critical Rail Roles Needed Over the Next Five Years

Engineering Roles	Non-Engineering Roles
Software Engineer	Project Manager
Assurance Engineer	ICT Security Specialist
Signal Engineer	Train Controller
Track Engineer	Signal Electrician
Battery Engineer	Train Driver
Project Engineer	Data Analyst
Electrical Engineer	Data Scientist
Mechanical Engineer	Sustainability Adviser

These roles are essential to building, operating and maintaining an efficient and modern rail system in Australia. The emphasis on digital and data-related positions reflects the industry's shift towards advanced technologies and the need for a workforce adept in these areas.

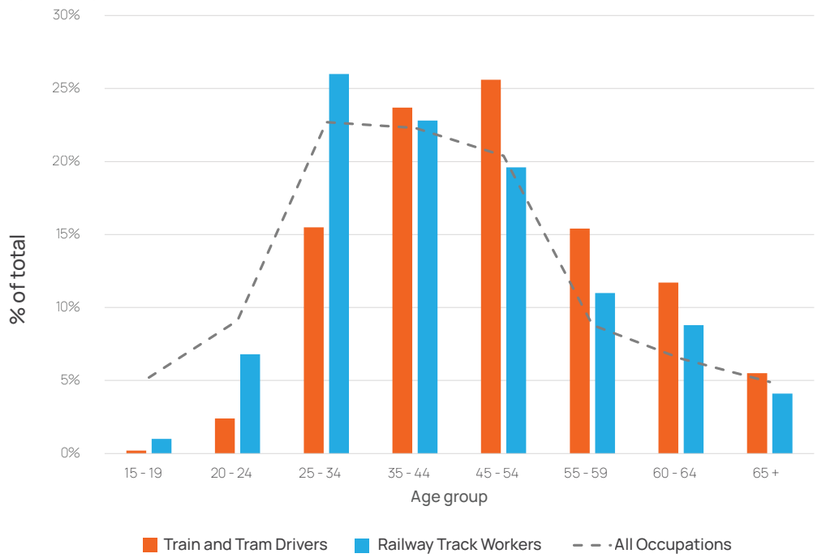
It should be noted that a large proportion of the current workforce gap for the Rail industry is related to the construction of new infrastructure and will be picked up in the activities of adjacent Jobs and Skills Councils (JSCs) including BuildSkills and Manufacturing Industry Skills Alliance.

[9] National Transport Commission. Meeting future rail skills demand

The Rail sector must adapt to retirements and evolving roles

The Rail industry has an ageing workforce with many employees approaching retirement age. According to Jobs and Skills Australia's (JSA) Occupation Profile data (**Figure 2**), up to 17.2% of Train and Tram Drivers are over 60, while the number of younger workers remains low, suggesting that retirements could further exacerbate current skill shortages in the near future. Similarly, the Australasian Railway Association expects the proportion of Train Drivers over 60 could be as high as 20.2%.[10]

Figure 2: Age Distribution of Key Rail Occupations and National Average



Source: JSA November 2024, Occupation Profiles Data, Tables 7 and 9

A THIRD OF TRAIN AND TRAM DRIVERS *are over 55*

[10] Australasian Railway Association. (2023). The rail workforce: An analytical overview - Rail Skills Hub

Industry associations continue to advocate for urgent action to offset the upcoming wave of retirements. This will require a deeper understanding of the roles that will be most impacted and the way in which some roles will change due to technological advancements. Research commissioned by the ARA[11] in 2023 identified the job roles with higher retirement risks, with train drivers most prominent among these. Modelling for the research report presented a worst-case scenario that would result from employees retiring at age 62. In this case, about 35% of the rail workforce could be of retirement age by 2035.

The industry needs to build workforce capacity in preparation for the expected wave of retirements. In Census 2021, workers aged under 25 years made up less than 5% of the rail workforce.[12] Employers have said the challenge of attracting more young people into the industry and transferring industry knowledge to new entrants is being hampered by a shortage of experienced workers with the required trainer and assessor qualifications. For experienced rail workers, remuneration as a trainer is not enticing enough to make gaining the Certificate IV in Training and Assessment an attractive career pathway.

Demand for specialised skills in automation and digital skills are increasing

With industry adopting new technologies, employers see a growing need for specialised skills in automation, data analytics and digital skills. Understanding how these skills are reshaping traditional rail occupations will be crucial for implementing strategies to attract and retain a skilled workforce.

ISA will continue to conduct consultation to inform the development of future strategies for the Rail industry.

Identifying and prioritising work required to support the National Transport Commission's Future Rail Skills[13] requirements will emphasise approaches to mitigate the existing skills shortage and will focus on:

- skills and knowledge requirements for emerging technologies and decarbonisation
- strategies to assist with knowledge transfer of ageing workforce
- increased diversity targets
- strategies to improve attractiveness of the industry
- developing a skilled workforce to support the growing infrastructure pipeline.

ISA will also continue to collaborate with other JSCs and key stakeholder groups to ensure that the needs of the Rail industry are considered holistically and are informed by relevant industry intelligence.

Future Consultation:

- Future Rail Skills
- Collaboration between JSCs that cover rail occupations
- Skilled migration
- International benchmarks

[11] Australasian Railway Association. (2023). The rail workforce: An analytical overview

[12] ABS. (2021). Employment in the 2021 Census

[13] National Transport Commission. (2024). Future skills framework. Pg. 8

B. Rail organisations struggle to attract young and diverse talent

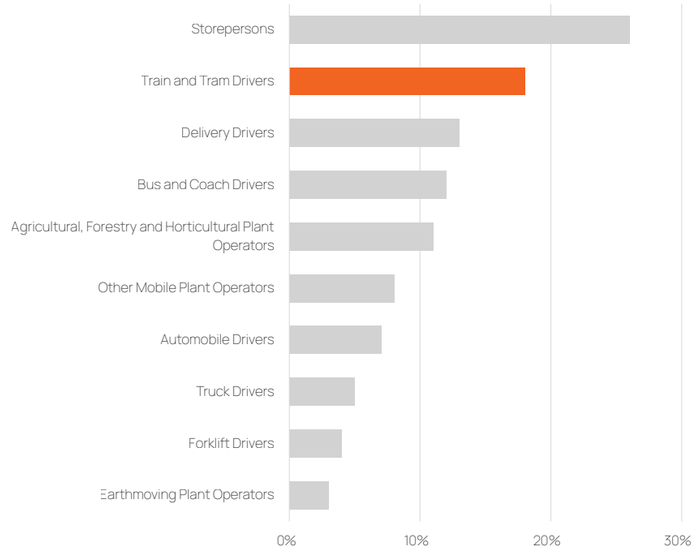
Workforce shortages in the Rail industry have been worsened by a failure to attract young and diverse talent. With an ageing workforce, where many workers are approaching retirement, industry recognises there is a need to broaden recruitment options.

Increasing representation of under-represented groups strengthens the workforce

Although female representation in rail operational roles is relatively low—females account for only 11.8% of Rail operational workers[14]—initiatives like the Women in Rail Strategy 2023-26[15] are improving participation. Increasing female representation brings diverse skills to the workforce and employers understand the need to attract underrepresented workers as necessary to meeting their demands.

Proactive measures to enhance female participation are demonstrating positive outcomes. Although only 18% of Train and Tram Drivers are women, making the occupation appear male dominated, it has the second-highest female share among comparable roles (**Figure 3**). This share has risen sharply from just 4% in the 2006 Census[16].

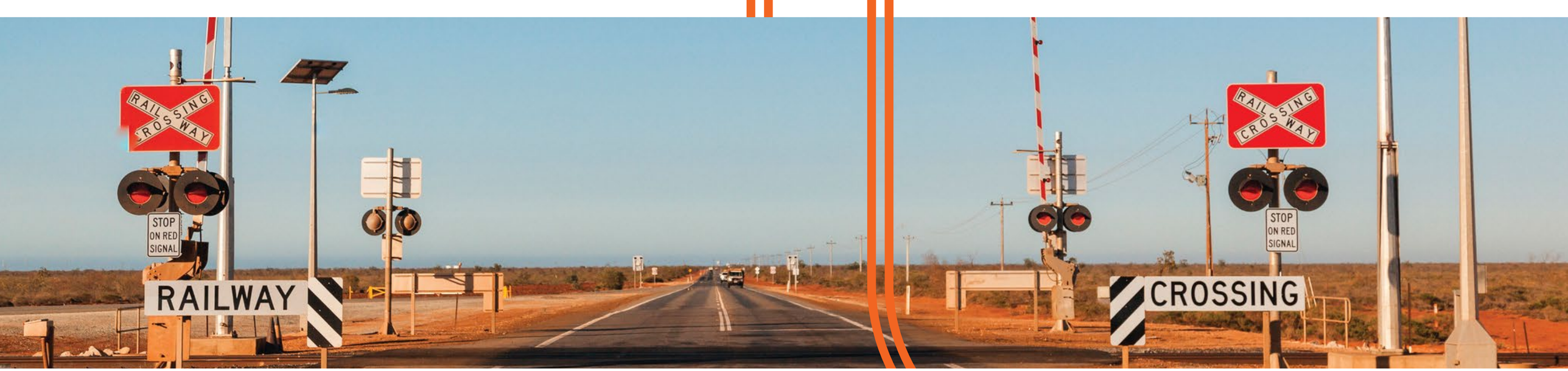
Figure 3: Highest Female Representation Among Machinery Operators and Drivers



Source: JSA November 2024, JSA Labour Force Trending, Female Share, 4 Quarter Avg

FEMALE TRAIN/TRAM DRIVERS

up from 4% to 18%



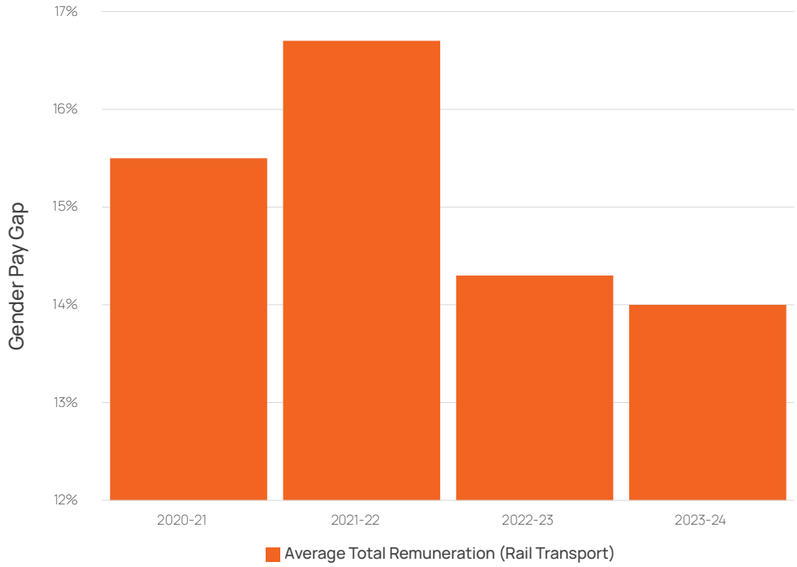
[14] Australian Bureau of Statistics, Detailed Labour Force Survey, EQ08 - Employed persons by Occupation unit group of main job, November 2024 (annual average of original data)

[15] Australasian Railway Association. (2023). ARA Women in Rail Strategy 2023-2026

[16] Australian Bureau of Statistics. (2006). '2006 Census - Employment, income and education', TableBuilder

The Rail sector's gender pay gap, at 14% in 2024, continues to improve (**Figure 4**), reflecting efforts taken to address gender disparities.[17] This figure captures all employees, including full-time, part-time and casual workers, providing a comprehensive view of progress within Rail companies. This progress highlights the industry's commitment to creating a more equitable work environment. However, ongoing efforts are necessary to further reduce the gap and support workforce attraction and retention. Ongoing work on skilled migration will continue to investigate temporary and permanent skilled work visas. As an example, the BLD Engineer's initiative[18] to support female engineers in the workforce focuses on assisting highly qualified, capable women and migrants who are struggling to find employment in the engineering sector. Examples of current practice will be considered to understand how skilled work visas are meeting the needs of the Rail industry and addressing workforce shortages.

Figure 4: Median Gender Pay Gap in Total Earnings for the Rail Industry



Source: WGEA Industry Data Explorer 2024, Data Explorer Industry Results 2023

THE GENDER PAY GAP HAS *narrowed to 14%*

The representation of First Nations Australians in the Rail industry is comparatively high. While First Nations Australians represented 2.3% of all workers in Census 2021, representation was twice as high among rail workers (4.7%). On the other hand, representation of workers with a disability within the Rail industry is comparatively low. Nationally, the 2021 Census recorded about 1% of the labour force as having a disability, with the Rail industry showing about half that percentage. [19]

Lack of visibility of underrepresented groups can deter people from diverse backgrounds from considering roles in the industry, thus perpetuating a cycle of underrepresentation. To address labour shortages, the industry will need to adopt new recruitment practices and foster a more inclusive and diverse workforce.[20]

The Rail sector must diversify recruitment to stay competitive

Enhancing recruitment strategies to attract a broader range of candidates will be necessary for the industry to meet its future demands.[21]

It will also be necessary for the Rail industry to build skills and capability internally. Robust skilling regimes will need to be in place to help diverse new workforce entrants who cannot be expected to immediately replicate the skills and productivity of experienced retiring workers.[22]

17 Workplace Gender Equality Agency. Data Explorer: Industry mid-point for average total remuneration (47 – Rail Industry) Retrieved 24/02/2025
18 BLD Engineers. (2024). Engineering with social responsibility
19 Australian Bureau of Statistics (2021) '2021 Census - Employment, income and education', TableBuilder
20 National Transport Commission. (2024). Future skills framework.
21 National Transport Commission. (2024). Future skills framework.
22 Victoria State Government. (2023). Rail skills strategy 2022-2026

ISA's survey highlights the need for promotion of varying job roles and career specialisations across the Rail industry to attract suitable candidates in metropolitan, regional and remote locations. Survey respondents indicated that there is a lack of career progression in the industry and that the current structure impacts retention.

Improving the perception of Rail careers may help with recruitment challenges

Industry stakeholders have observed that there are community misperceptions about the nature of work in the Rail industry, with limited awareness of the range of roles and career pathways. Employers in ISA's 2025 survey also highlighted the need for the promotion of career pathways. To overcome negative perceptions of working in rail, the industry could better promote itself to potential new entrants as a desirable career option. The technology credentials required of the industry continue to grow which can appeal to younger candidates.[23] Additionally, the rail sector's gender pay gap (**Figure 4**) performance provides competitive remuneration for female candidates. Rail employers would benefit from highlighting these aspects of working in the sector.

Industry stakeholders would like to strengthen efforts to promote career pathways by providing information to career co-ordinators and educating parents about the financial and social benefits of careers in rail. Employers recognised that collaboration between the Rail industry, the education sector and government is a constructive way that workforce capability and capacity challenges can be addressed.

Industry Skills Australia will work with stakeholders to support these and other initiatives that help to attract underrepresented groups to the sector, such as school leavers, women, First Nations people and people from culturally and linguistically diverse communities, and to address any barriers to entry for these groups.

Programs, including incentives, also need to be in place for older workers to assist with the training and mentoring of the future rail workforce, and promotion of rail as a rewarding career path.

Actions Complete or Underway:

- Improving Rail Career Information

Future Consultation:

- Workforce attraction and career transition

23 Rail Skills Hub. (2024). Attracting a new generation of rail talent

C. Lack of rail interoperability hampers labour mobility

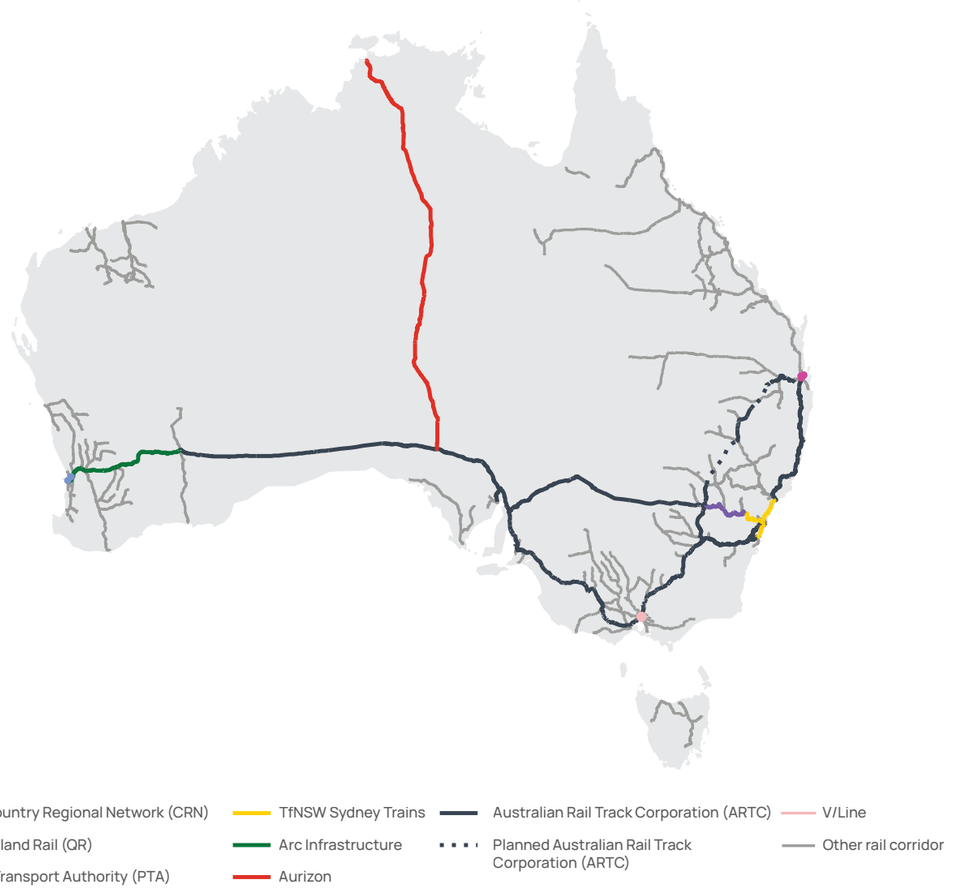
Lack of national interoperability is a known feature of Australia's rail networks. Australia's rail system consists of 18 separate networks, each with its own operational rules, technologies and systems. As a result, individual networks have developed their own specialised training and assessment processes. Currently, rail workers must familiarise themselves with up to 12 different rule books and continuously maintain their competencies for each network they work on.[24] Standards for rolling stock and components, and the operating rules for rail infrastructure and communications and control systems, also vary across jurisdictions.

[24] National Transport Commission. Reducing the burden on rail workers

Table 3: Barriers to Workforce Mobility

18 SEPARATE RAIL NETWORKS	Each has its own set of rules, systems, and technologies
12 RULE BOOKS	Workers must be knowledgeable in multiple **rule books** across **different networks**
COMPETENCY CHALLENGES	While training shares common elements, there's **no mutual recognition**
ONGOING RETRAINING	Workers are **reassessed on skills they already possess** when moving between jobs and jurisdictions

Figure 5: NTC Network Information Map



Source: National Transport Commission 2025, Network information [Interactive map]

AUSTRALIA'S RAIL SYSTEM HAS
18 separate networks

Improving national rail interoperability will enhance workforce mobility

Industry continues to highlight that the differences between rail networks present a significant challenge for labour mobility. Employers told ISA that workers with qualifications and experience on one network cannot easily transfer to another location or between the passenger and freight industry sectors because their skills and knowledge may not be recognised or applicable.

Improving national rail interoperability is a National Cabinet priority,[25] and current investments in infrastructure offer an opportunity to work towards a harmonised network across Australia. Recent efforts have focussed on streamlining the rolling stock approval process and developing mutual recognition of rail skills training. These initiatives aim to reduce costs, improve workforce mobility and enhance the overall efficiency of the rail network.

Streamlining training requirements can cut costs and downtime

Training and competency requirements are driven by jurisdiction and/or network compliance requirements for Rail Infrastructure Managers (RIMs) and operators.[26] Contractors operating across multiple jurisdictions and/or networks are the most impacted by differing requirements. Operators continue to raise concerns that retraining workers to meet RIM/operator requirements for new projects results in significant costs and associated downtime. Responses to ISA's 2025 survey strongly concur with this industry challenge driven by state-based requirements and training needing to be tailored to meet localised/jurisdictional needs. Industry supports streamlined training and the recognition of prior learning. However, the sector has a respectful understanding that theoretical knowledge does not always equate to practical knowledge and safety should not be compromised due to cost and length of time to deliver training.

Despite the differences in regulatory requirements, entry-level skill requirements are largely the same across different jurisdictions and networks, with slight changes to a small proportion of content based on local 'Rule Book' requirements. However, different RIMs/operators may not recognise training delivered by some Registered Training Organisations (RTOs) due to a lack of confidence in the consistency and quality of training provision. Industry stakeholders agree that efficiency in training delivery is being hampered by the need for different training and assessment resources for each jurisdiction/network, as well as by a shortage of trainers and assessors.

The National Transport Commission's (NTC) blueprint[27] for nationally recognised entry-level rail skills training aims to establish mutual recognition to support greater workforce mobility and interoperability across networks. The initiative has the potential to reduce training time and costs, and boost productivity for the Rail industry.

As a member of the project reference group, ISA has supported the progress of the Blueprint through engagement with other key stakeholders, including RIMs and rail operators, contractors, RTOs and training regulators, government agencies and industry regulators.

In 2024, ISA as the JSC for rail commenced Phase 1 of the Blueprint that focused on:

- establishing overarching principles and a framework for mutual recognition that will guide future reform activities, with both non-regulatory and regulatory pathways available
- bringing key stakeholders together to lead the reform, while sharing knowledge to identify and lift practices across the sector
- setting an industry-driven benchmark for validation and moderation, giving industry greater confidence in the consistency of outcomes delivered by the VET sector
- providing opportunities for all people to participate in rail by enabling greater consistency across training and assessment practices and setting a pathway towards a national curriculum.

Some RTOs are not meeting industry expectations for training quality

The development of national rail skills curriculum to support entry-level training will harmonise training programs and help to address industry concerns about inconsistent approaches to training and assessment.[28]

Actions Complete or Underway:

- Mutual Recognition Phase 1

Future Consultation:

- Mutual Recognition Phase 2

[25] Department of Industry, Science and Resources. National rail procurement and manufacturing strategy

[26] Queensland Rail. (2023). Signalling and operational systems competence management

[27] National Transport Commission. (2023). National blueprint for the mutual recognition of entry-level rail training courses

[28] Australasian Railway Association. (2024). Harmonisation of Rail Standards

D. New skills are needed to address technical changes

The adoption of digital technology will bring significant technical change to the Rail industry.[29] Forthcoming changes promise to deliver many benefits for passengers, freight users, the industry, and society more broadly. For example, digital signalling and train control solutions can introduce:

- increased capacity and better performance
- enhanced safety
- asset and system optimisation
- improved passenger experience
- accelerated economic growth
- improved environmental outcomes and increased sustainability.

However, the industry has reported shortages in the technical skills needed to operate and maintain digital, automated and new technologies for rail signalling, communications, asset management, track maintenance, high speed, autonomous and remotely operated rail. ISA's 2025 survey responses indicate the Rail industry is in varying stages of adopting digital skills and will require strategic investment and approaches to develop the skills needed.

ISA is continuing to work with industry and RTOs to understand capacity and capability gaps and inform a range of pilot projects to improve access to quality rail training and assessment.

Industry stakeholders have suggested specific areas for new Training Package content relating to:

- high level specialist unit/s covering infrastructure diagnostic vehicles
- autonomous train operations
- rail specialisation unit to support transition of qualified engineers from other fields
- Skill Sets to cover different Train Driver specialisations (e.g. freight, urban electric, country passenger, steam locomotive, heritage motive power).

[29] Rail Express. (2024). NTC forum supports digital technology rollout in rail industry

Digital transformation in Rail requires a shift in workforce skills

For the Australian Rail industry to realise the potential benefits of digitisation, the workforce must have the skills needed to support a smooth transition to new technologies.[30] Workers need digital skills to adapt to new technologies and related work roles. According to the National Transport Commission, by 2027 digital technologies are expected to impact nearly 40% of rail workers.[31] Already, most jobs in the rail sector have been required to engage with the introduction of digital technologies and no employee will be unaffected by digital impacts into the future.

Increasing digital skills requirements may impact the knowledge levels required for some occupations, meaning that the related qualifications may need to be aligned to higher levels of the Australian Qualification Framework (AQF). Analysis of the relevant Training Package qualifications will consider the impact on AQF alignment.

Proposed Actions:
- Digital Skills
- Autonomous Train Operations

Actions Complete or Underway:
- Rail Digital Skills Analysis

Future Consultation:
- Autonomous Train Operations Stage 2

BY 2027, DIGITAL TECHNOLOGIES WILL IMPACT NEARLY

40%

OF RAIL WORKERS JOB ROLES

[30] Australasian Railway Association Building-Australian-Rail-Skills-for-the-Future.pdf

[31] National Transport Commission. Meeting future rail skills demand

E. Rail training capacity falls short of industry demands

A shortage of qualified trainers and limited RTO availability is impacting the Rail industry's ability to attract and train new industry entrants. The industry needs access to better training facilities, more qualified trainers and a wider range of RTOs to meet workforce demands and address skilling challenges.

The Rail industry needs better training facilities, flexible delivery models, and cost-effective resources to meet workforce demands

Stakeholders report that insufficient training facilities, technology and learning resources are limiting the industry's ability to address skilling challenges. It has also been reported that the level of investment required to construct and maintain a training facility that replicates real world environments is an additional constraint. More flexible training delivery models and stronger partnerships between industry and RTOs are needed to meet industry needs.

ISA's 2025 survey indicated that the cost of training and access to rolling stock and simulators impacts the delivery of training. A shortage of experienced trainers is also creating challenges for the industry, resulting in poor training outcomes and potentially risking the safety of workers.

Additionally, thin markets for some rail qualifications mean that the development of quality training and assessment resources is not commercially viable. Support for the development of industry prescribed resources could make the delivery of quality training more achievable for RTOs.

Training and pathways (including school-based training and entry level and technical Skill Sets) need to better support industry's ability to respond to workforce capacity challenges and skills shortages across construction, operation and maintenance of rail infrastructure.

There is a shortage of qualified trainers

Access to workforce training is restricted by a critical shortage of qualified Rail industry trainers, assessors and subject matter experts. This shortage to support training and assessment reflects broader shortages of 'Vocational Education Teachers' consistently reported across all states and territories over the past three years (**Table 4**). Experienced rail workers are deterred from becoming trainers or assessors due to negative perceptions of the role and poor remuneration. The requirement to attain a Certificate IV in Training and Assessment also deters experienced workers from taking on trainer and assessor roles.

Table 4: Vocational Education Teacher Shortages by State/Territory

State/Territory	2021	2022	2023	2024
Australian Capital Territory	No Shortage	Shortage	Shortage	Shortage
New South Wales	No Shortage	Shortage	Shortage	Shortage
Northern Territory	Shortage	Shortage	Shortage	Shortage
Queensland	No Shortage	Shortage	Shortage	Shortage
South Australia	No Shortage	Shortage	Shortage	Shortage
Tasmania	No Shortage	Shortage	Shortage	Shortage
Victoria	No Shortage	Shortage	Shortage	Shortage
Western Australia	No Shortage	Shortage	Shortage	Shortage

Source: Occupational Shortage List (14 February 2025)

In July 2025, revised Standards for Registered Training Organisations (RTOs)[32] will introduce a provision for the use of industry experts for training under direction of an accredited trainer or assessor. The flexibility that this change provides may enable the Rail industry to use industry experts for some training delivery, providing a mechanism for transferring knowledge from experienced workers who are nearing retirement and potentially alleviating pressure from the current lack of VET trainers and assessors.

The revised Standards present an opportunity to improve access to industry-relevant training by leveraging industry expertise.

This is an outcome that is appealing to industry stakeholders who have suggested that more flexibility in training delivery models and stronger partnerships between industry and RTOs would enable the VET system to better respond to industry needs.

Limited RTO availability is restricting access to rail qualifications

There are relatively few RTOs delivering rail qualifications from the TLI Transport and Logistics Training Package. For 12 of the 21 rail qualifications in the Training Package, there are fewer than six RTOs registered to deliver training. Although this number increased marginally from the previous year (2023), only five of the qualifications have more than 10 RTOs with scope to deliver the qualification.[33] This concentration means that not only are most rail qualifications offered by a limited number of RTOs, but enrolments are also heavily skewed toward just a few qualifications. The Certificate II in Rail Infrastructure alone makes up 69% of all rail enrolments in 2023.[34]

The vast majority of VET in the rail sector is delivered by enterprise or private RTOs which means training almost always occurs whilst in employment. Industry stakeholders report that learners can be disadvantaged when providers do not recognise training delivered by others in a competitive market.

Work underway to establish nationally recognised entry-level rail skills training is expected to increase the capacity of RTOs to deliver training prior to employment for new workforce entrants. Proactive leadership is required from Commonwealth and State Governments to address the lack of funding support currently available for the Rail industry workforce.

Actions Complete or Underway:

- VET Workforce Project

Future Consultation:

- Addressing Rail industry training shortfalls

[32] Department of Employment and Workplace Relations. Revisions to the Standards for Registered Training Organisations
[33] training.gov.au. (October 2024)
[34] National Centre for Vocational Education Research. (2024). VOCSTATS: Total VET activity

F. Skills gaps for cyber security threats

The Rail industry is facing an emerging but significant challenge in cyber security. The Australian Cyber Security Centre specifically identifies rail safety and signalling equipment as vulnerable to cyber security threats.[35] As new technologies and innovations are being introduced at a rapid pace, the impact and risk of cyber-attacks is increasing and organisations are struggling to detect, report and resolve these risks.

Cyber security is a growing challenge for the Rail industry

The strategic significance of rail infrastructure as highlighted by the Security of Critical Infrastructure Act 2018, can make the industry a target for cyber-attacks and security threats. When systems are compromised, the resulting disruption can have severe repercussions on infrastructure, operating systems and safety.

The industry needs to manage increasing cyber security risks and implement effective measures for management, monitoring, and compliance. The challenge for Rail industry organisations is to ensure they have the workforce capability to detect, report, and resolve cyber security risks.[36]

ISA's 2025 survey verified that cyber-attacks and security threats are a matter of concern and industry is exploring initiatives to safeguard and mitigate impacts.

Investment is needed in cyber security skills

The Rail industry needs to invest in skills to understand and protect against cyber security threats. ISA's 2025 survey validated that cyber security is a matter of significant concern to stakeholders and the industry is looking at initiatives and investments to minimise the impact of cyber-attacks.

An opportunity for collaboration between TAFEcyber, a consortium of TAFE colleges across Australia, JSCs and industry may enable innovation to train and deliver skills to mitigate risk from cyber-attacks.

CYBER SECURITY THREATS PUT RAIL

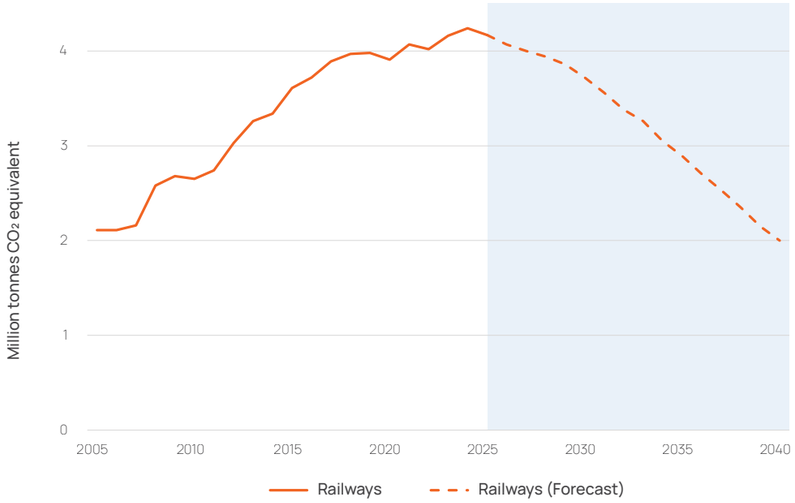
safety and signalling systems at risk

[35] Australian Cyber Security Centre. (2023). Annual cyber threat report 2023–2024. Australian Government
[36] Rail Industry Safety and Standards Board. (2018). Australian rail network cyber security strategy

G. New skills demands rise as rail shifts to clean energy

The Australian Government is investing heavily in clean energy initiatives, with a focus on decarbonisation and the development of new industries.[37] Business leaders recognise the importance of achieving net zero carbon emissions to remain competitive, and many believe that sustainable transformation is driving a competitive edge for companies. **Figure 6** shows that, although railway emissions nearly doubled from about 2.6 million tonnes of CO_2-equivalent in 2005 to around 4.2 million tonnes in the mid-2020s, projections indicate a subsequent decline, with emissions falling back to roughly 2005 levels by 2040.

Figure 6: CO_2 Equivalent Emissions in Rail Transport



Source: DCCEEW (2024) Australia's emissions projections 2024

RAIL EMISSIONS ARE

projected to halve by 2040

Decarbonising Rail will reshape industry skills and jobs

Rail transport in Australia is expected to decarbonise gradually, with electricity's share projected to double by 2050, alongside increased biofuel use.[38] Battery electric trains and hydrogen fuel cells are emerging options to replace the existing diesel fleet in coming decades.[39]

Aurizon, Australia's largest rail freight provider, is undertaking a world-first pilot to build a zero-emissions capable freight locomotive using battery technology.[40] Additionally, in March 2024, Aurizon secured a $9.4 million grant from the Australian Renewable Energy Agency (ARENA) to develop, test and trial a battery-electric tender to be used in conjunction with a modified locomotive.[41]

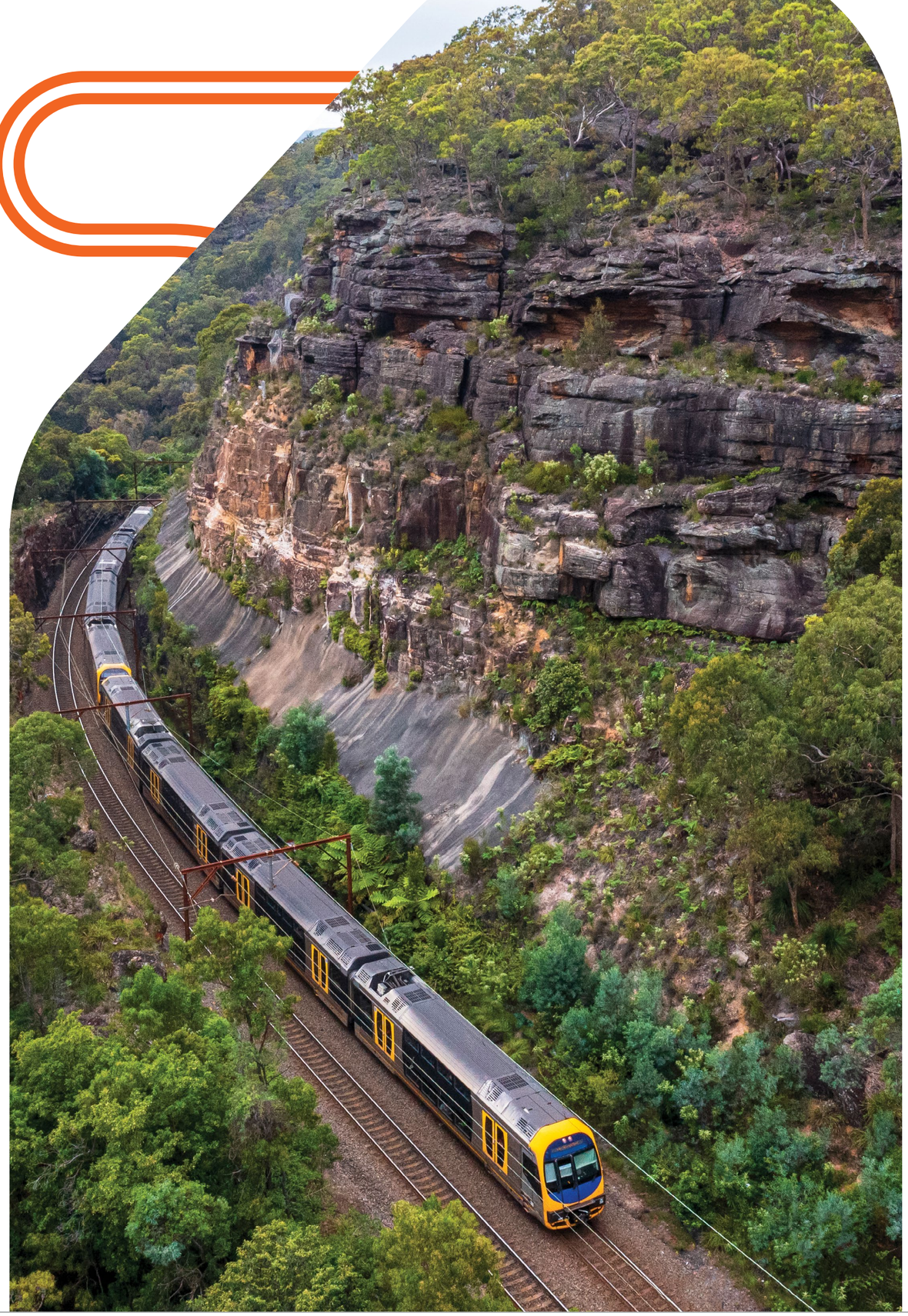
37 Australian Government. Budget 2024–25

38 CSIRO (November 2023). Pathways to net zero emissions

39 Australasian Railway Association. (2024). The critical path to decarbonise Australia's rail rollingstock

40 Aurizon. (2023). Work starts on first zero-emissions capable freight locomotive built in Australia

41 Aurizon. (2024). Aurizon secures funding to develop next-generation freight trains using renewable energy



However, there is uncertainty about the workforce skills needed to support the transition to decarbonisation in the Rail industry. Initial work in the heavy haul and freight rail sectors indicates that there will be a need for more electrical skills, as well as skills associated with battery electric solutions.[42]

ISA's 2025 survey indicated that decarbonisation is not an immediate issue for the Rail industry. However, survey respondents recognise that the solutions implemented by the rail operators and RIMs who are early adopters of new technology will drive new and changing skill requirements.

Clean energy investment has the potential to boost regional economies

Government investment in clean energy initiatives, such as regional hydrogen hubs and electric vehicle charging infrastructure, is expected to drive economic growth and job creation in regional areas.[43] These investments will support Australia's transition to a low-carbon economy. However, as rail employers in regional areas already face challenges recruiting skilled workers and tradespeople, regionally based workforce skilling solutions will be required to ensure there is an adequate skills pipeline for both new and established regional employers.

Future Consultation:

- Tracking emerging technology adoption in the Rail industry

42 Australasian Railway Association. (2023). The rail workforce: An analytical overview

43 Australian Trade and Investment Commission. (2025). Australia accelerates investment in net zero transformation

Proposed Actions

The 2025 Workforce Plan identifies the following proposed actions developed in consultation with industry to address the sector-specific and cross-sector challenges and drivers.

Table 5: Proposed Actions to Address Key Challenges and Drivers

Digital Skills

Labour Market Dynamics	Proposed Action/Strategy	Key stakeholders

Key challenge/driver
D. New skills needed to address technical changes
 	
Symptom:
Skills shortage
	Activity:
	Using DigComp 2.2 as the Digital Framework to review digital skills for a selected number of occupations in our industries.
	
	Components:
	• Develop a Digital Occupational Profile (DOP) template based on DigComp 2.2 to assist in identifying the digital skills found within our industries occupations.
	• Use the DOP template to undertake a review of selected occupations.
	  ○ Re-validate Rail Digital Skills project work.
	  ○ Coordinate working groups of industry experts to review selected occupations within our industries to identify digital skills using the DOP.
	  ○ Coordinate a review across our training packages with respect to the impact of digital transformation using information from the European Skills, Competences and Occupations (ESCO) to compare to the Australian Digital Skills identified from the completed DOPs.
	
	Impact:
	• Identify how digital technology developments are likely to change the profile of skills in demand.
	• Identify where future-focussed upskilling and reskilling pathways need to be established, and opportunities for establishing them.
	• Outcomes can be used to inform training product design, training delivery and support a systematic approach to the analysis of skills supply and demand.
	• Identify where there is a case for specific training package development of qualifications, skill sets and units of competency that responds to changes in skills profiles and job roles driven by digital technology developments.
	  ○ Training qualifications and units that facilitate improved training and assessment of transferrable digital skills that match industry requirements.
	  ○ Impact of training product development/maintenance work provides maximum benefit for industry, whilst minimising the impact of training product churn for RTOs.
	
	For further details visit the ISA Website.
		• Industry enterprises
		• Industry peak bodies/ associations
		• Industry unions
		• Registered training organisations
		• State/territory training authorities
		• State/territory industry advisory bodies
		• Other relevant Jobs and Skills Councils

Autonomous Train Operations

Labour Market Dynamics	Proposed Action/Strategy	Key stakeholders

Key challenge/driver
D. New skills needed to address technical changes
 	
Symptom
Skills shortages
	Activity:
	• To deliver Stage 1, identify and benchmark autonomous train operations practices and existing skills gaps to determine how vocational training products can be modernised to encompass current practices to address emerging autonomous skills gaps.
	• Stage 1 of the project will develop a report that will provide recommendations for the development of training products to support autonomous train operations. This report will inform Stage 2 of the project to review existing and/or develop new training products within the TLI package.
	
	Considerations:
	• The development of a dedicated qualification within the TLI training package focused on emerging occupations related to Autonomous Train Operations (e.g., Certificate IV in Autonomous Rail Operations).
	• Expansion of existing qualifications by introducing an "Autonomous Train Operations" specialisation (stream) within existing qualifications such as:
	  ○ Certificate III in Rail Customer Service
	  ○ Certificate III in Rail infrastructure
	  ○ Certificate IV in Network Control.
	
	• Creation of new units of competency to cover skills and knowledge gaps, including but not limited to:
	  ○ Autonomous Train Fault Diagnosis and Rectification
	  ○ AI and Data Analytics for Rail Network Efficiency
	  ○ Human-AI Collaboration in Rail Traffic Control
	  ○ Emergency Response Coordination for Autonomous Train Systems
	  ○ Passenger Interaction and Support in Automated Train Environments.
	• Creation of Skill Sets to support upskilling/reskilling of existing workers.
	• Integration with current regulatory and compliance frameworks to maintain alignment with safety and operational standards set by Rail Safety National Law (RSNL) and other governing legislation.
	
	Impact:
	• Provide an initial skills gap analysis to identify new and existing units of competency that are relevant to support this new emerging technology of autonomous operations within a rail environment.
	
	Timing:
	June 2025 – December 2025
		• Rail, Tram and Bus Union (RTBU)
		• Australasian Railway Association
		• Rail Infrastructure Managers (RIMs) and Rail Operators (private and public)
		• Rail Contractors
		• Registered Training Organisations (RTOs)
		• Regulators

Actions Complete or Underway

The following provides an update on ongoing actions aimed at addressing the challenges and drivers identified in the 2024 Workforce Plan, many of which remain relevant in 2025.

VET Workforce Project

Labour Market Dynamics	Project Details	Key Stakeholders
Challenge/Driver E. Rail training capacity falls short of industry demands **Symptom** Occupational shortage	**Summary:** The VET Workforce Project is a Commonwealth funded initiative being led by the ten Job and Skills Councils with the aim to build and support a secure and sustainable VET workforce. The Australian Government, in collaboration with Jobs and Skills Australia has developed a VET Workforce Blueprint (the Blueprint) to support a high quality and sustainable workforce. The VET Workforce Blueprint has been developed in collaboration with states and territories to provide a roadmap to grow, support and sustain the VET workforce. To continue and further support the work VET Workforce Blueprint, Industry Skills Australia is undertaking a project that will concentrate on vocational education providers in the transport sectors (Aviation, Maritime, Rail and Transport and Logistics) to complement and contribute to the opportunities and actions included in the Blueprint. **Impact:** ISA will deliver a workforce study comprising the following components: • Understanding the VET Workforce • VET workforce roles and needs • VET workforce pathways and pipelines • Future and emerging VET Workforce Issues. For further details visit the ISA Website.	• Department of Employment and Workplace Relations • Registered Training Organisations • Training Regulators • Australian Education Union • State/territory Training Authorities (STAs) • State/territory industry advisory bodies • Industry enterprises • Industry peak bodies/ associations • Jobs and Skills Australia

Mutual Recognition Phase 1

Labour Market Dynamics	Project Details	Key Stakeholders
Challenge/Driver C. Lack of rail interoperability hampers labour mobility **Symptom:** Occupational and skills shortages	**Summary:** To support the interoperability and labour mobility of workers to implement the Mutual Recognition Blueprint from the National Transport Commission. **Impact:** Support greater mobility of workers and gain industry confidence in the education sector. For further details visit the ISA Website.	• Rail Infrastructure Managers (RIMs) • Rail Operators (private and public) • Rail Contractors • Registered Training Organisations • Australasian Railway Association • National Transport Commission • Unions • State/territory Training Authorities (STAs) • Rail Industry Safety and Standards Board (RISSB) • Office of the National Rail Safety Regulator (ONRSR) • VET Regulators

Improving Rail Career Information

Labour Market Dynamics	Project Details	Key Stakeholders
Challenge/Driver B. Rail organisations struggle to attract young and diverse talent **Symptom** Under attractive occupation	**Summary:** To address attraction and retention challenges in the Rail industry, this initiative develops a comprehensive repository of career information on specific occupations. **Impact:** • Combat negative industry perceptions and misconceptions about available roles. • Informed students with a comprehensive list of qualifications and training programs available for each role including higher education qualifications and training programs. For further details visit the ISA Website.	• Schools • National Careers Institute • Training Providers • Employers • State Industry Training Advisory Bodies • State/territory Training Authorities (STAs) • First Nations groups • Disability advocacy groups • Employment service providers • Peak bodies • Unions

Rail Digital Skills Analysis		
Labour Market Dynamics	**Project Details**	**Key Stakeholders**
Challenge/Driver D. New skills are needed to address technical changes **Symptom** Skills shortage	**Summary:** Using a digital framework to analyse digital skills required for selected Rail occupations. **Impact:** Recommendations from the project will assist in providing digital skill requirements for Rail qualifications. For further details visit the ISA Website.	• Unions • Industry enterprises • Registered Training Organisations • Australasian Railway Association • Rail Industry Safety and Standards Board (RISSB) • Office of the National Rail Safety Regulator (ONRSR)

Timeline of Activities

Future Consultation

Additional engagement and consultation activity has been identified to assist in the development of future strategies or initiatives to inform the 2026 Workforce Plan. These focus areas cover the key themes associated with our challenges and drivers and are not an exhaustive list as industry may raise additional issues as we work with them in 2025:

A. Industry faces critical occupational and skills shortages

Future Rail Skills

Collaboration between the ARA, NTC, RTBU and ISA to identify and prioritise responses for future rail skills requirements (e.g. skill and knowledge requirements for new locomotive fuel types). Also, an analysis of long-term FTE demand for critical operators, differentiating between roles in the passenger and freight sectors of the industry.

Additional consultation will be conducted to consider how future leadership capacity and capability might be planned and developed.

Collaboration between JSCs that cover rail occupations

Establish a regular dialogue between relevant JSCs (T&L, manufacturing, electrical and construction) and key stakeholder groups to ensure there is a whole of sector examination of rail workforce needs, and implementation of collaborative responses where required.

Skilled migration

In consultation with industry stakeholders, we will investigate the current temporary and permanent skilled work visas, including the recent transition from the Temporary Skill Shortage (TSS) visa to the new Skills in Demand (SID) visa, reviewing how they are meeting the needs of the workforce and addressing shortages.

International benchmarks

In consultation with industry stakeholders, we will investigate and conduct a comparison of rail workforce profiles with international benchmarks.

B. Rail organisations struggle to attract young and diverse talent

Workforce attraction and career transition

Research on promotion of professional opportunities and career pathways available in rail using Industry Skills Australia's Rail Career Information[44] and the ARA Work in Rail website[45] to link employers with jobseekers.

C. Lack of rail interoperability hampers labour mobility

Mutual Recognition Phase 2

Phase 1 of this body of work will inform Phase 2 outputs of the project. Consultation throughout the project will consider both Phase 1 outputs, as well as information required to plan Phase 2.

D. New skills needed to address technical changes

Autonomous Train Operations Stage 2

Exploring the feasibility of Autonomous Train Operations Stage 2.

E. Rail training capacity falls short of industry demands

Addressing Rail industry training shortfalls

Consultation and engagement with key rail stakeholders to identify training shortfalls to meet industry demands.

F. Skills gaps for cyber security threats

Address growing cyber security threat challenges to identify training needs.

Collaboration opportunities with industry, TAFEcyber and other JSCs.

G. New skills demands rise as rail shifts to clean energy

Tracking emerging technology adoption in the Rail industry

Monitoring emerging tech adoption from rail providers.

[44] Industry Skills Australia. (2024). Rail career information. Retrieved from https://www.industryskillsaustralia.org.au/rail-career-information

[45] ARA. Work in Rail. Retrieved from https://workinrail.net.au/ (accessed March 2025)

Megatrends

Megatrends are overarching, transformative shifts that impact the economy, workforce, and global environments. These trends shape the future landscape of industries, influencing business operations, innovation, and strategic planning. Four key megatrends have been identified as having profound impacts and driving long-term changes across the Aviation, Maritime, Rail and Transport and Logistics industries.

Occupational and workforce shortages

Workforce shortages are a critical megatrend affecting all areas of the Transport Supply Chain, disrupting operations and limiting business growth. The Aviation, Maritime, Rail and Road Transport industries are struggling to attract and retain skilled workers. This growing challenge is driven by an aging workforce, changing job expectations and increased competition from other industries. To address this, there must be a strong focus on raising awareness about the wide range of careers available, from technical and operational roles to digital and managerial positions. Developing clear, accessible career pathways and training programs is essential to boost attraction, support retention and future-proof the industry workforce.

Diversity

Diversity is an emerging megatrend across the Transport Supply Chain, with increasing efforts to build more inclusive and representative workforces. Many parts of the industry have historically attracted limited segments of the population, resulting in a narrow talent pool. By actively promoting diversity and inclusion, the industry can open employment and career opportunities to a broader range of people, helping to address long-term workforce shortages. Inclusive hiring practices, workplace culture improvements and targeted outreach programs are essential to attract new talent and create environments where all individuals can thrive. Embracing diversity strengthens innovation, resilience and the overall sustainability of the Transport Supply Chain.

Automation and new technologies

Automation and new technologies are rapidly reshaping the Transport Supply Chain, enhancing operational efficiency and safety. Key developments include the rapid growth in autonomous vehicles, drones and automated port and warehouse operations. Artificial intelligence (AI) is increasingly used to optimise operations, improve maintenance planning and manage complex supply chains. The growing reliance on digital platforms and connected devices, from real-time tracking systems to cloud-based logistics management tools, is transforming day-to-day operations. As a result, there is strong demand for building the digital skills capability of the workforce, including in the use of new technologies, data analytics and cyber security. This megatrend is fundamentally redefining roles, workflows and the capabilities needed.

Sustainability

Sustainability is a major megatrend transforming the Transport Supply Chain, driven by the need to reduce environmental impact and meet global climate goals. The shift toward alternative and environmentally friendly fuels, such as hydrogen and biofuels, is gaining momentum. There is also increased adoption of electric and autonomous vehicles and vessels, battery-powered equipment, and low-emission aircraft. These technologies not only lower carbon emissions but also improve energy efficiency. The successful implementation of these innovations requires significant upskilling across the workforce to ensure compliance with evolving regulations and to safely operate, maintain and handle new systems, machinery and fuels. Sustainability is reshaping industry standards, operations and workforce capabilities for the long term.

Approach to **Consultation**

The Transport Supply Chain industries are extremely diverse, comprising businesses ranging from complex national and global companies through to small one and two person businesses. Over 99% of enterprises within our coverage are small businesses.[46]

Our consultation approach is aligned with the needs of stakeholders, ensuring their voices are heard and their concerns meaningfully reflected in the Workforce Plan. Through rigorous engagement using diverse methods and platforms, we gather valuable insights that inform actionable strategies and effective responses to workforce drivers and challenges.

This inclusive process not only strengthens the quality of this Workforce Plan, but also ensures it delivers tangible benefits to our stakeholders. By embedding stakeholder input at every stage, we foster shared ownership and build workforce solutions that are both relevant and impactful.

The following key elements highlight some of the engagement mechanisms used in the development of this Workforce Plan, demonstrating our commitment to transparency, collaboration and continuous improvement.

Strategic Workforce Planning Committees

The Strategic Workforce Planning Committees consist of senior industry leaders from across Australia's Transport Supply Chain industries - Aviation, Maritime, Rail, Transport and Logistics. Each Committee leads the development of their respective national Workforce Plan, with the goal of building a world class Transport Supply Chain workforce. Their focus is on identifying workforce challenges, emerging skills needs, and the responses needed from industry, government and the national skills system.

Industry Advisory Council

The Industry Advisory Council (IAC) is a high-level, tripartite mechanism that brings together a range of industries with the single goal of building a resilient and agile supply chain workforce. Made up of senior supply chain executives and industry leaders from a range of sectors and organisations, it operates as a dynamic advisory mechanism to the Board and SWPCs by providing world-class business intelligence and strategic insights from across the economy.

The IAC provides advice on cutting-edge trends in technology adoption and automation; immediate and emerging skills and workforce development priorities; opportunities for cross-industry collaboration and solutions; and responses required by the national skills system, industry and governments.

Technology Futures Taskforce

The Technology Futures Taskforce (TFT), established by ISA, comprises experts in the innovation and technology sector specialising in supply chain technologies. Its activities are focused on identification of technologies likely to automate skills and job roles and trigger structural change in the workforce.

The TFT is an advisory mechanism to the Board and SWPCs by providing intelligence and insights on technology impacts for our sectors.

Supply Chain Leaders' Summit

Our 2024 Supply Chain Leaders' Summit brought over 150 participants to Parliament House, including industry leaders, union representatives, parliamentarians and government officials, to explore the current and future workforce planning and development challenges facing Australia's Transport Supply Chain industries.

With many critical issues common across Aviation, Maritime, Rail, Transport and Logistics, this event provided valuable input into our activities and workforce plans.

Industry engagement

Diverse stakeholder views and insights are captured through extensive engagement activities to keep people involved and informed. These include industry roundtables, presentations and participation at industry conferences and events, enterprise site visits, one-on-one meetings, webinars, website updates, monthly e-newsletters and social media.

Cross JSC engagement

Cross JSC collaboration is a proactive and ongoing effort to address shared workforce planning and skills development priorities. This includes open consultation and coordination when workforce planning strategies may impact the scope of work or stakeholders of another Jobs and Skills Council.

Roundtables

The metropolitan and regional roundtables offer a unique opportunity to gather firsthand insights from a diverse array of stakeholders. These include employers, key Transport Supply Chain stakeholders, local Chambers of Commerce, Regional Development Australia and Local Jobs and Skills organisations.

[46] Australian Bureau of Statistics. (2024, August 27). Counts of Australian businesses, including entries and exits, July 2020 - June 2024

Key Stakeholder Groups

INDUSTRY

- Enterprises
- Unions
- Industry associations
- Innovation sector
- Industry peaks
- Occupational licensing/ regulatory bodies
- Professional bodies

INDIVIDUALS

- Existing workers
- Apprentices/trainees
- Learners
- Job seekers

VET SYSTEM

- Registered Training Organisations
- Individual VET practitioners
- Jobs and Skills Councils
- Industry Training Advisory Bodies
- VET Regulators
- Training Product Assurance Body

SCHOOLS SECTOR

- Secondary schools
- Individual teachers
- Secondary education authorities
- Careers associations

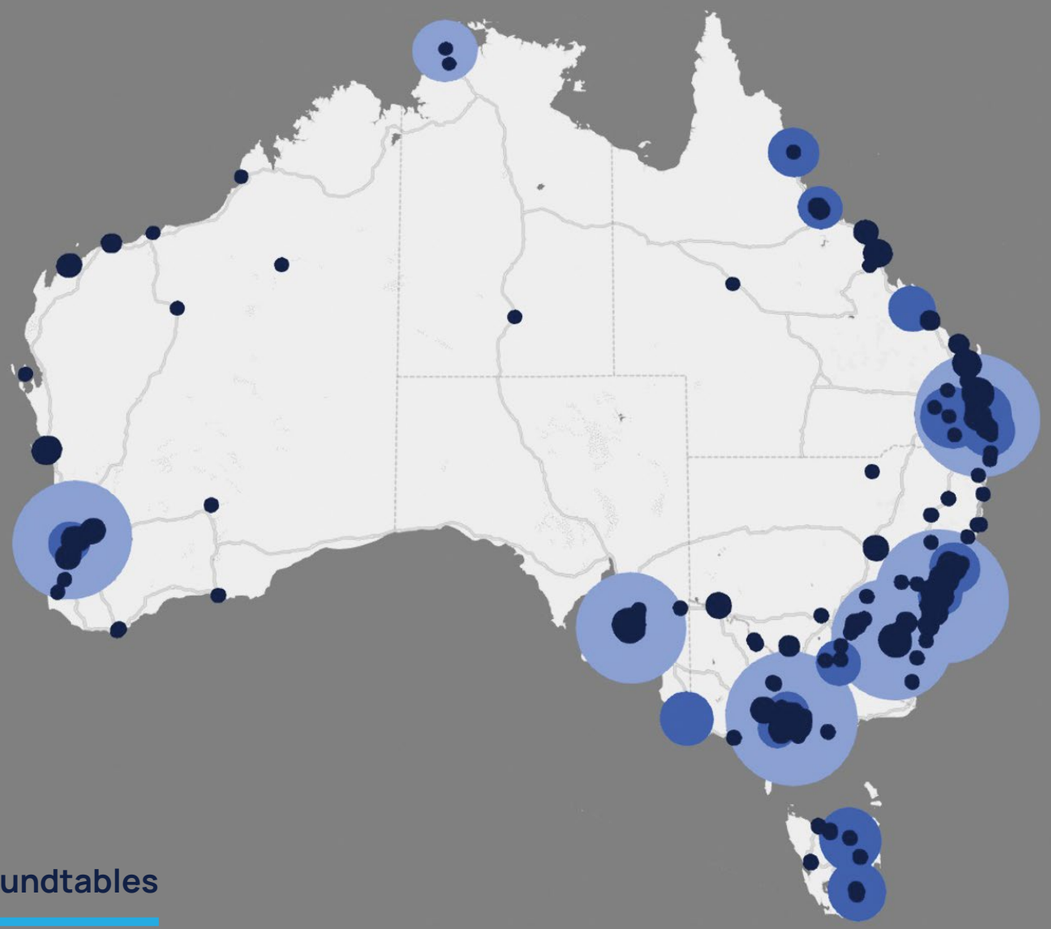
HIGHER ED.

- Universities

GOVERNMENTS

- Department of Employment and Workplace Relations
- Jobs and Skills Australia
- National Careers Institute
- National Centre for Vocational Education Research (NCVER)
- Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts
- Regional Australia Institute
- Regional Development Australia
- State Training Authorities
- National Transport Commission

Engagement Coverage



Roundtables

Roundtables are one of the mechanisms used by ISA to actively consult and engage with industry at a grassroots level across Australia. It is important that Australia's metropolitan, rural, regional and remote voices are heard to ensure that all industry challenges and opportunities are identified and reflected in the Workforce Plan. Roundtables enable the training system to better understand and anticipate the shifting skill needs of Australia's supply chains and shape meaningful responses that work at the local level. This, in turn, assists the overall capability of the training system to meet industry's needs. Other methods of engagement include, conference events and presentations, newsletters, articles in industry publications, social media, meetings (both face-face and virtual) and enterprise site visits.

ISA conducted 17 Roundtables in prominent metropolitan and regional areas throughout Australia, bringing together key stakeholders from industry, Government departments, unions, training providers and employment service providers. Each roundtable provided intelligence about workforce priorities, key blockages, and potential high-impact solutions unique to their respective region, as well as the many challenges and opportunities common across all areas.

Stakeholder feedback:
The main challenge overall is attraction and retention of workers, not only to industry, but also to some regions. Common themes identified included:

1. Workforce attraction and retention
- Workforce shortages, competition for workers, ageing workforce and low wages
- Careers are often shaped by personal preferences and societal influences (family, peers, advice)
- Poor perception vs. reality of particular jobs and industries
- Younger generations have different expectations (e.g., flexibility) and COVID-19 changed workplace expectations
- Regional, cultural and personal circumstances affect workforce participation
- Seasonal work limits year-round stability and attraction
- Career transition challenges and low visibility of occupational mobility
- Lack of national career promotions and visibility of career pathways and job mobility options
- Poor retention rates due to multiple external and internal factors.

2. Skills development and job readiness
- Disconnect between qualifications and graduate outcomes with job-readiness and industry needs
- High cost of training for employers and students
- Limited training options in regional/remote areas
- Outdated or rigid training models that lack innovation and flexibility
- Shortage of trainers and assessors and inadequate use of Subject Matter Experts (SMEs) in training delivery, especially in regional areas
- Emerging technologies drive new skill requirements and job transitions
- Lack of funding /subsidies for specific qualifications.

3. Migration and skilled labour access
- Complex, lengthy and costly skilled migration processes
- Overseas qualifications and experience often don't align with local standards
- Quality and safety concerns with recognising foreign credentials
- Skilled migration could fill gaps in the short term, but current system poses significant barriers.

The following challenges are common across some regions, not all, that will require unique, local and targeted responses:
- Lengthy training time to have work-ready staff
- Access to community/social services such as childcare and housing availability
- Access to public and affordable transport
- Crime is impacting industry significantly in some regions, including ability to attract workforce or to gain required employment checks
- Internet connectivity.

Solutions and opportunities
- Increase usage of group training or labour hire organisations to assist with developing a 'job ready workforce'
- Working with local migrant and First Nations communities and support services
- Increase visibility and promotion of career pathways across supply chain industries
- Encourage investment in employee upskilling and development
- Offer financial support or subsidies for workforce training and education
- Introduce more flexible and innovative delivery models
- Include occupations experiencing shortages on the Australian Apprenticeship Priority List.

Existing Workforce Strategies and Initiatives

Our implementation of the research, consultation and activities outlined above will be informed by existing workforce strategies and initiatives. Where relevant, we will seek to align our work with, or contribute to, these strategies and initiatives, or collaborate with those responsible for implementing them.

Below is a mapping of the workforce strategies and initiatives that we have identified as relevant to the Rail Industry and the key issues and evidence gaps 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:

MAPPING KEY:

A. Industry faces critical occupational and skills shortages

B. Rail organisations struggle to attract young and diverse talent

C. Lack of Rail interoperability hampers labour mobility

D. New skills needed to address technical changes

E. Rail training capacity falls short of industry demands

F. Skills gaps for cyber security threats

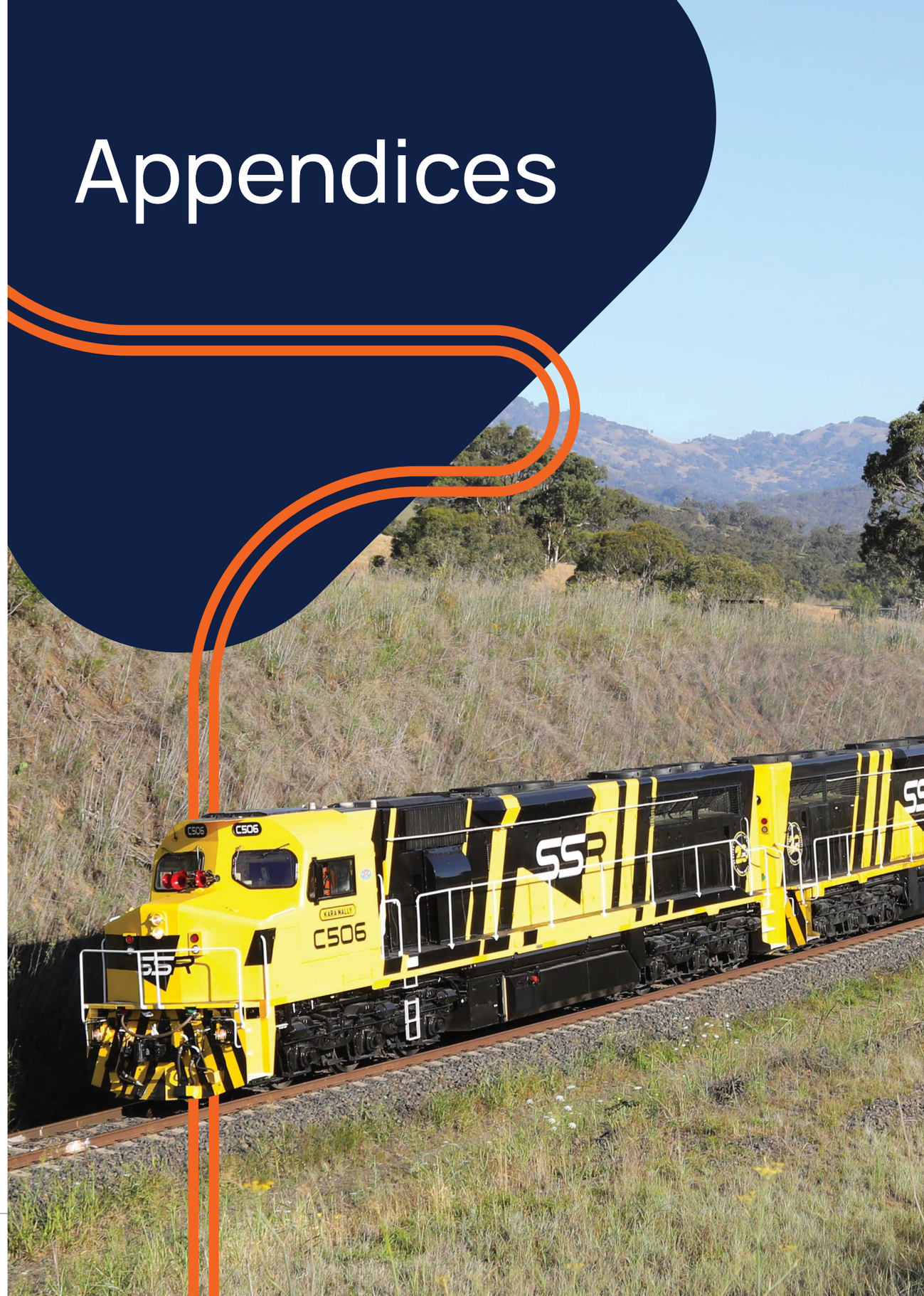
G. New skills demand rise as Rail shifts to clean energy

Table 6: Existing Workforce Strategies and Initiatives

Title	Mapping	Description	How it will impact/inform the WFP
National Rail Action Plan National Transport Commission (NTC)	A, B, C, D, E, G	The National Rail Action Plan (NRAP) draws together governments and industry to maximise benefits from the current record infrastructure investment. • Includes sections covering Workforce and Harmonisation & Standardisation, as well as a schedule of 12 recommended actions. • Workforce components of the plan are broad reaching to support building the capacity and capability of the rail workforce. • Provides the basis for further consultation and analysis to prioritise review of existing training products. • Additionally, NRAP focuses on creating a unified rail system to improve safety, productivity, and workforce mobility, and supports the adoption of new technology and innovation.	A number of NRAP priorities are directly addressed in this Workforce Plan and its proposed actions, including: • Digital Skills • Interoperability • Workforce capability and diversity There is potential for cross JSC collaboration because the NTC report covers units in multiple training packages.
Future Digital Skills in Rail NTC This report was completed for the NTC by Deloitte in 2023 and shared with ISA but has not been publicly released.	A, D, G	This report conducts a gap analysis to identify the future digital skills required to enable interoperable rail networks across the nation. • Analysis and recommendations, including for review of National Training Package units of competency.	Supports building Rail industry digital capability. Provides the basis for further consultation and analysis to prioritise review of existing training products. There is potential for cross JSC collaboration because the NTC report covers units in multiple training packages.
Future Skills Framework NTC This report was completed for the NTC in 2024 and shared with ISA but has not been publicly released.	D, G, F	This report outlines the essential skills needed for future success across various industries. • It identifies 13 core technical skills and behaviours crucial for competitiveness and growth. • The framework helps organisations prioritise investment in skills development, supports the creation of new career pathways, and addresses skills gaps through targeted training and upskilling initiatives.	Enhances the Rail industry's digital capabilities and lays the groundwork for further consultation and analysis to prioritise the review of existing training products.
Mutual Recognition Blueprint NTC This Blueprint completed for the NTC by Infrastructure Skills Advisory in 2023 was shared with ISA but has not been publicly released	C	The Blueprint was developed based on extensive consultation with Rail Infrastructure Managers, Rail Operators, Rail Contractors, Peak bodies, State/territory Training Authorities, Registered Training Organisations, and Industry and VET Regulators. • It sets a pathway to achieving the mutual recognition of entry-level rail training courses across Australia. • It provides a model that can be applied to greater ranges and levels of courses in the future.	The blueprint is proposed for implementation in the 'Proposed Actions' section of this Workforce Plan.
ARA Skills Capability Study - 2018 ARA And the subsequent Determining the Future Demand, Supply and Skills Gap for Australia's and New Zealand's Rail Workforce: 2022-2032 ARA & NTC	A, B, D, F	• The first report is a workforce capability analysis for the rail industry based on planned and forecast rail infrastructure development in Australia and New Zealand over the next 10 years. • The second report prepared by Oxford Economics Australia for the NTC and ARA published in 2023 updates and expands on the first.	Provides detailed analysis conducted by the Oxford Economics that has been drawn upon in developing actions to identified challenges.
Building Australian Rail Skills for the Future ARA	A, B, C, D, E, F, G	Provides strategies to alleviate the growing shortage of skills facing the Rail industry. It covers: • Determination of rail skills demand. • Promotion and development of rail career pathways. • Strategies for ongoing skills development to ensure an effective supply chain.	Provides detailed analysis conducted by the ARA that can be drawn upon in developing actions to identified challenges.

Title	Mapping	Description	How it will impact/inform the WFP
Work in Rail ARA	A, B	Promotes careers in rail and supports development of entry level rail skills. Provides: • Rail career and career path information • Rail employer directory.	Supports building rail workforce capacity and capability. ISA will ensure our work supports and is complimentary to this ARA initiative.
Rail Industry Worker (RIW) ARA	A, B, D	Provides: • National competency management program for Australian rail industry workers • Competency frameworks for vocations • Approved RTO lists. Supports building: • Rail workforce capacity and capability • Industry confidence in the training system.	RIW uses units of competency from the TLI Training Package. ISA will work with the ARA and Industry to ensure units used are fit for purpose.
Women in Rail Strategy ARA	B	Promotes rail as an inclusive and diverse industry without barriers that is recognised as an employer of choice for women. Includes initiatives related to: • Industry knowledge • Organisational impact • Professional development • Promotion of rail to women.	Assists industry to build a diverse and inclusive workforce. Builds rail workforce capacity and capability. Will support development of strategies to address recruitment and retention challenges.
Gender Diversity Data Report 2024 ARA	B	Report on outcomes of a gender diversity survey conducted by the ARA in 2023.	Provides additional data collected directly from industry that will assist responses targeting improving female representation in the sector.
Annual Cyber Threat Report Australian Signals Directorate	F, D	The ASD Cyber Threat Report 2023-24 highlights the evolving cyber threats facing Australia. • It outlines increased cyber threats, critical infrastructure at risk, ransomware and espionage, and cyber security measures. • It underscores the need for continuous improvement in cyber security.	Assists the industry foster innovation in training and skill development to mitigate cyber-attack risks.
Decarbonisation initiatives ARENA	D, G	Australian Renewable Energy Agency (ARENA) announced $9.4 million in funding to a new project to electrify rail freight transport of commodities (March 2024). • This project aims to develop, test, and trial a battery electric tender to power a diesel-electric locomotive in a hybrid diesel and battery configuration, aiming to reduce emissions in Australia's resources industry.	This initiative is based on Australia's Bioenergy Roadmap, which will inform the development of the Rail Workforce Plan in 2025. This will inform the advice provided to the Rail Strategic Workforce Planning Committee to identify skills and initiatives required for the transition of the Rail industry to green energy.

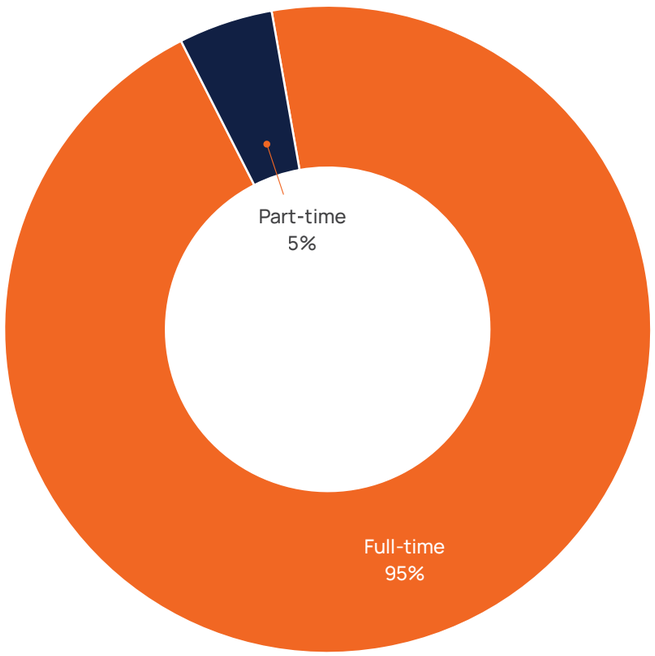
Appendices



Appendix A
Reference Data and Charts

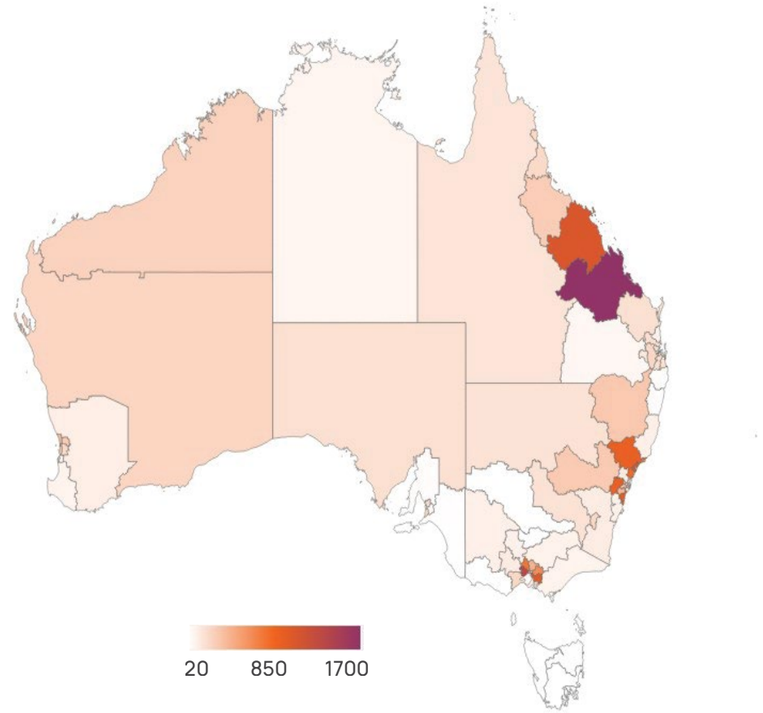
Employment and distribution

Figure 7: Employment Status 2024



Source: ABS, Nov 2024, Labour Force, Australia, Detailed, Table EQ08 (annual average)

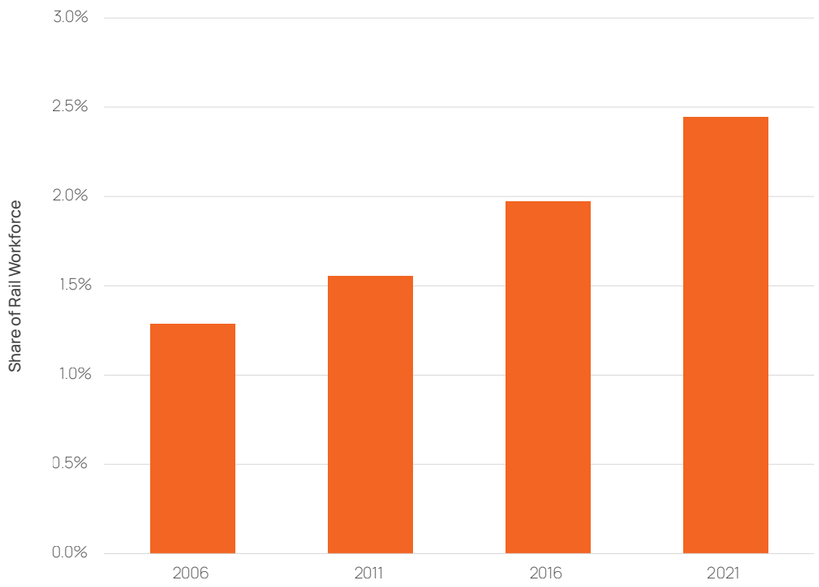
Figure 8: Distribution of Rail Workers



Source: JSA, Feb 2025, NERO, ANZSCO 4 Digit Occupations and SA4 Regions

Occupational demographics

Figure 9: First Nations Employees in Rail Workforce, 2006 – 2021



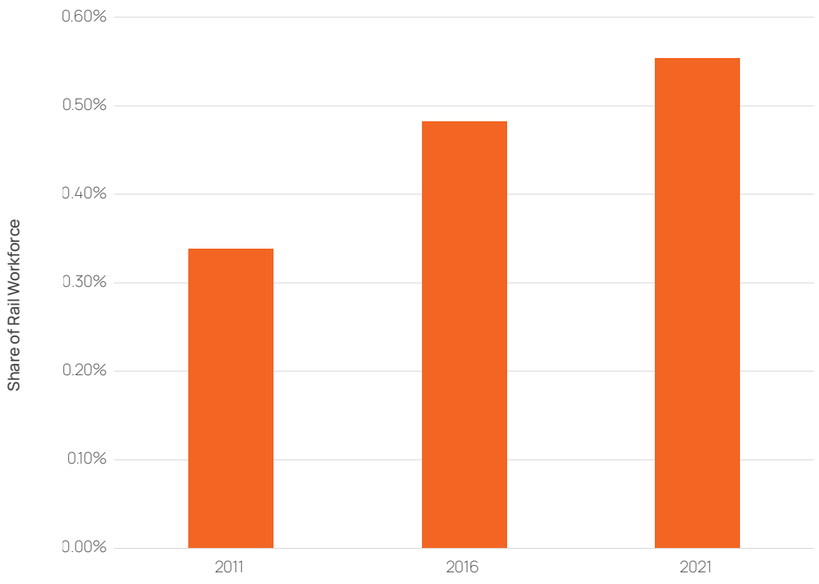
Source: ABS 2021, Census of Population and Housing, 2006 - 2021

THE PROPORTION OF FIRST NATIONS EMPLOYEES IN THE RAIL WORKFORCE

has increased by 1.1%

FROM 2006 TO 2021

Figure 10: Share of Employees with a Disability in Rail Workforce, 2006 – 2021



Source: ABS 2021, Census of Population and Housing, 2006 - 2021

THE PROPORTION OF EMPLOYEES WITH A DISABILITY IN THE RAIL WORKFORCE

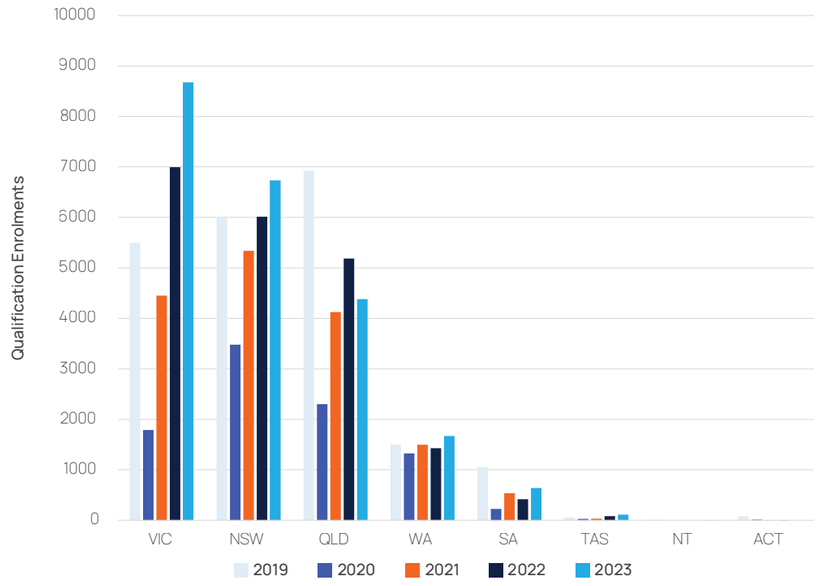
has increased from 0.34% to 0.55%

FROM 2011 TO 2021

Training

Please refer to 'Training system data' for a list of relevant VET qualifications associated with the charts.

Figure 11: Commencing Rail Qualification Enrolments



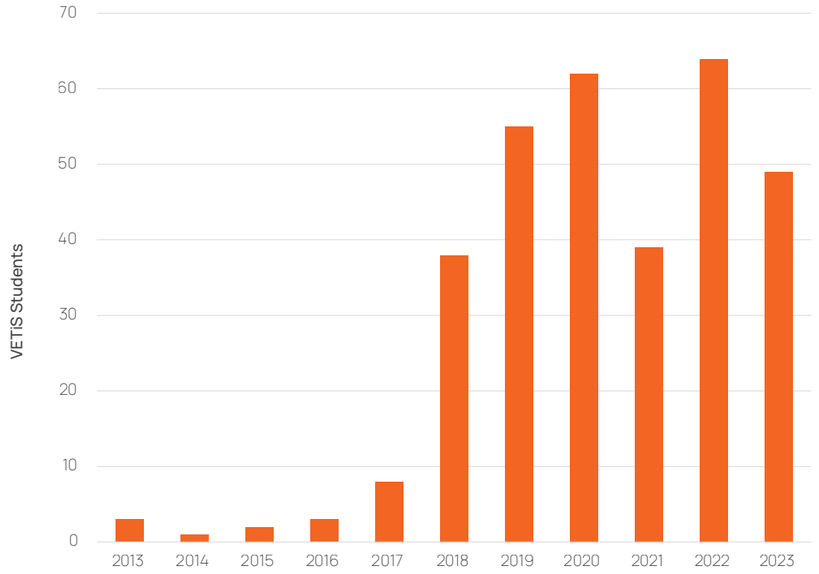
Source: NCVER, Total VET Students and Courses, Extracted March 2025

ENROLMENTS IN VICTORIA COMPRISED

39% of all Rail enrolments

IN 2023

Figure 12: Rail VETiS Students

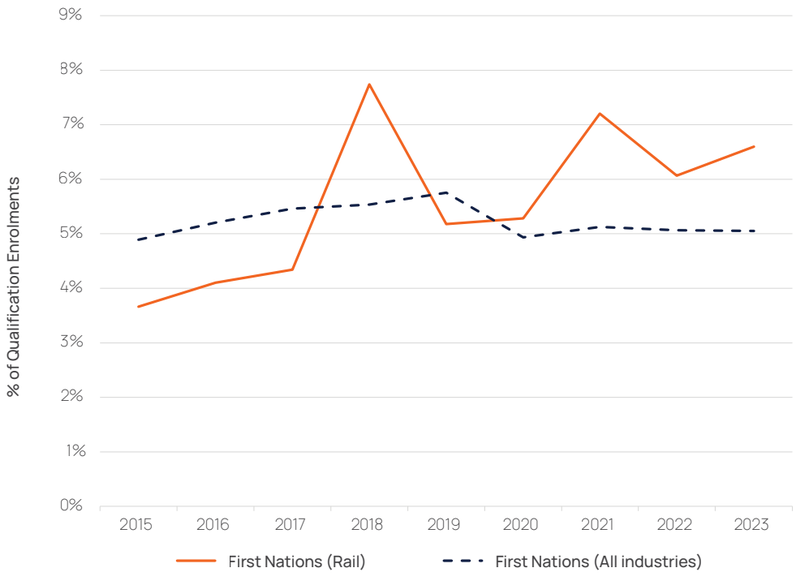


Source: NCVER, VET in Schools, Extracted March 2025

THE NUMBER OF VETiS STUDENTS HAS GROWN STRONGLY OVER THE LAST 10 YEARS, ALBEIT STARTING FROM VERY

low enrolments. Enrolments dipped substantially during COVID

Figure 13: Share of Qualification Enrolments by First Nations Students



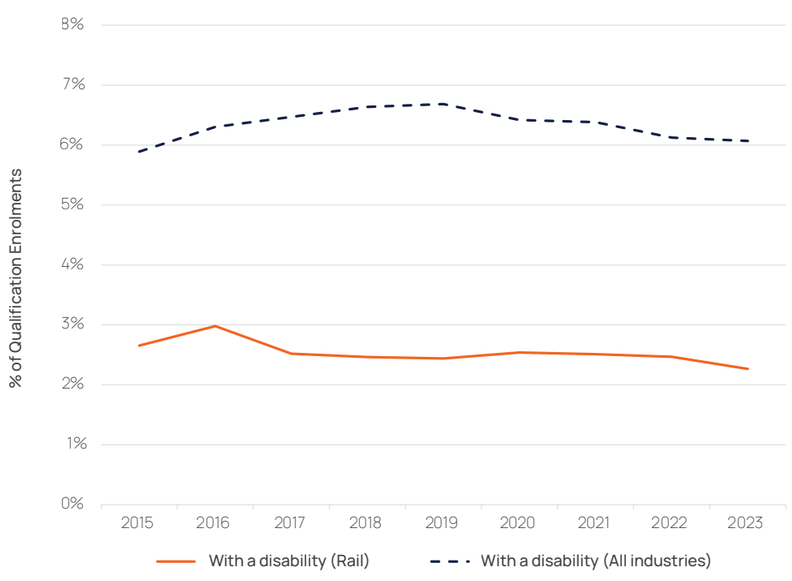
THE PROPORTION OF FIRST NATIONS STUDENTS HAS REMAINED ALMOST

steady since 2018, averaging 6% of total enrolments

IN RAIL QUALIFICATIONS

Source: NCVER, Total VET Students and Courses, Extracted March 2025

Figure 14: Share of Qualification Enrolments by Students With a Disability



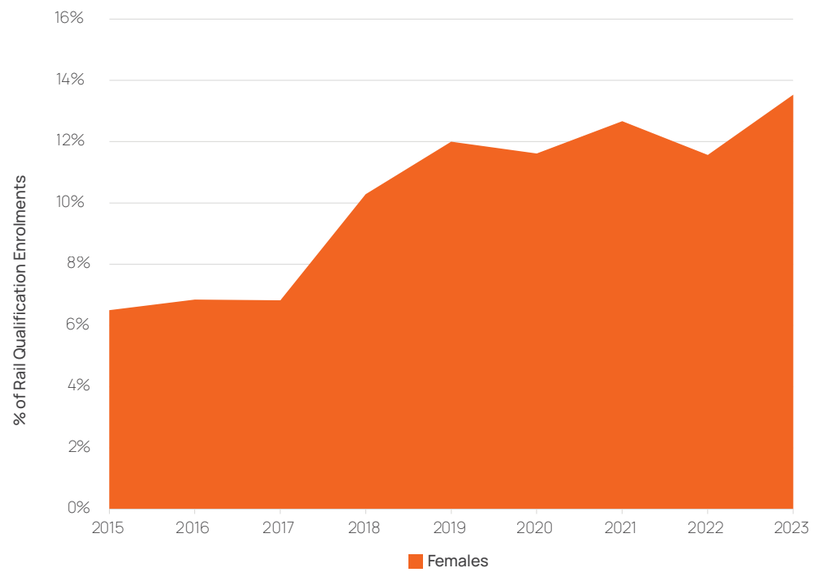
THE PROPORTION OF STUDENTS WITH A DISABILITY HAS REMAINED

steady since 2015, averaging 2.5% of total enrolments

IN RAIL QUALIFICATIONS

Source: NCVER, Total VET Students and Courses, Extracted March 2025

Figure 15: Share of Qualification Enrolments by Gender



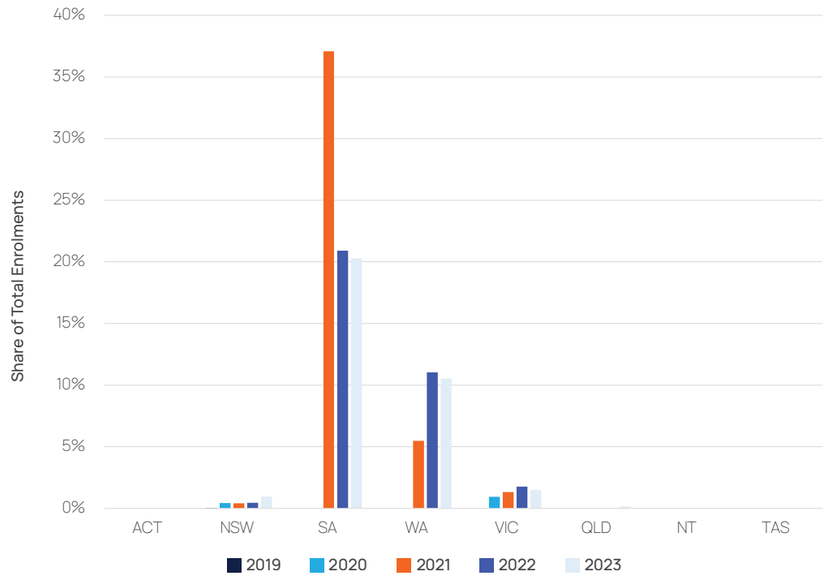
THE PROPORTION OF FEMALE ENROLMENTS IN RAIL QUALIFICATIONS HAS SLIGHTLY

increased from 7% to 14%

FROM 2015 TO 2023

Source: NCVER, Total VET Students and Courses, Extracted March 2025

Figure 16: Apprenticeships/Traineeships Share of Total Rail Enrolments in Each State/Territory



IN 2023, ABOUT ONE-FIFTH OF SOUTH AUSTRALIA'S RAIL ENROLMENTS WERE TRAINEESHIPS—

the highest proportion nationally

Source: NCVER, Total VET Students and Courses, Extracted March 2025

Training system data

Qualification Enrolments[47]

Qualification	2019	2020	2021	2022	2023
TLI21921 Certificate II in Track Protection	5061	735	907	800	1097
TLI22321 Certificate II in Rail Customer Service	75	158	111	39	47
TLI23221 Certificate II in Shunting	84	50	88	125	138
TLI27121 Certificate II in Rail Infrastructure	10604	5392	11258	14504	15297
TLI27221 Certificate II in Rail Track Vehicle Driving	148	0	41	59	129
TLI29921 Certificate II in Rolling Stock Maintenance	0	0	0	0	0
TLI30521 Certificate III in Passenger Train Guard	1526	219	229	189	291
TLI31421 Certificate III in Light Rail Driving	48	5	10	9	35
TLI31921 Certificate III in Mechanical Rail Signalling	210	25	19	26	30
TLI32121 Certificate III in Rail Structures	4	16	14	41	36
TLI32721 Certificate III in Track Protection	662	166	279	479	363
TLI32821 Certificate III in Rail Operations	64	0	0	0	4
TLI33021 Certificate III in Heritage Locomotive Assistant or Steam Locomotive Fireman	0	0	0	0	0
TLI33122 Certificate III in Rail Customer Service	266	260	209	405	501
TLI33221 Certificate III in Terminal Train Driving	54	15	32	59	69
TLI37122 Certificate III in Rail Infrastructure	378	399	688	942	1131
TLI40822 Certificate IV in Rail Safety Investigation	36	2	0	0	0
TLI40921 Certificate IV in Rail Network Control	62	34	149	152	161
TLI42422 Certificate IV in Rail Safety Management	15	0	0	0	18
TLI42622 Certificate IV in Train Driving	1894	1720	1990	2375	2930
TLI47121 Certificate IV in Rail Infrastructure	0	0	0	0	0
TLI50621 Diploma of Rail Operations Management	5	4	15	10	2
Grand Total	**21196**	**9200**	**16039**	**20214**	**22279**

Note: enrolment numbers include all versions of the qualification across the years they were available (e.g. TLI21921 Certificate II in Track Protection includes enrolments for TLI21911, TLI21915, TLI21918, TLI21920 and TLI21921)

[47] NCVER VOCSTATS <https://www.ncver.edu.au/research-and-statistics/vocstats>, extracted on December 2024

Qualification Completions[48]

Qualification	2019	2020	2021	2022	2023
TLI21921 Certificate II in Track Protection	67	40	36	40	22
TLI22321 Certificate II in Rail Customer Service	54	64	29	104	23
TLI23221 Certificate II in Shunting	59	36	27	65	48
TLI27121 Certificate II in Rail Infrastructure	1043	707	940	853	996
TLI27221 Certificate II in Rail Track Vehicle Driving	8	0	0	0	2
TLI29921 Certificate II in Rolling Stock Maintenance	0	0	0	0	0
TLI30521 Certificate III in Passenger Train Guard	213	154	141	56	102
TLI31421 Certificate III in Light Rail Driving	17	5	7	8	6
TLI31921 Certificate III in Mechanical Rail Signalling	6	25	2	21	18
TLI32121 Certificate III in Rail Structures	2	0	0	0	0
TLI32721 Certificate III in Track Protection	12	0	4	2	3
TLI32821 Certificate III in Rail Operations	0	0	0	0	0
TLI33021 Certificate III in Heritage Locomotive Assistant or Steam Locomotive Fireman	0	0	0	0	0
TLI33122 Certificate III in Rail Customer Service	0	106	108	78	277
TLI33221 Certificate III in Terminal Train Driving	4	0	0	0	0
TLI37122 Certificate III in Rail Infrastructure	71	81	123	92	135
TLI40822 Certificate IV in Rail Safety Investigation	3	1	0	0	0
TLI40921 Certificate IV in Rail Network Control	33	35	61	66	69
TLI42422 Certificate IV in Rail Safety Management	0	0	0	0	8
TLI42622 Certificate IV in Train Driving	1197	1843	940	791	1010
TLI47121 Certificate IV in Rail Infrastructure	0	0	0	0	0
TLI50621 Diploma of Rail Operations Management	6	5	23	15	0
Grand Total	**2795**	**3102**	**2441**	**2191**	**2719**

[48] NCVER VOCSTATS <https://www.ncver.edu.au/research-and-statistics/vocstats>, extracted on December 2024

Number of RTOs scoped to deliver Rail Qualifications[49]

Qualification	RTO count
TLI21921 Certificate II in Track Protection	12
TLI22321 Certificate II in Rail Customer Service	3
TLI23221 Certificate II in Shunting	7
TLI27121 Certificate II in Rail Infrastructure	28
TLI27221 Certificate II in Rail Track Vehicle Driving	7
TLI30521 Certificate III in Passenger Train Guard	1
TLI31421 Certificate III in Light Rail Driving	5
TLI31921 Certificate III in Mechanical Rail Signalling	7
TLI32121 Certificate III in Rail Structures	4
TLI32721 Certificate III in Track Protection	11
TLI32821 Certificate III in Rail Operations	4
TLI33021 Certificate III in Heritage Locomotive Assistant or Steam Locomotive Fireman	1
TLI33122 Certificate III in Rail Customer Service	3
TLI33221 Certificate III in Terminal Train Driving	5
TLI37122 Certificate III in Rail Infrastructure	26
TLI40822 Certificate IV in Rail Safety Investigation	0
TLI40921 Certificate IV in Rail Network Control	12
TLI42422 Certificate IV in Rail Safety Management	2
TLI42622 Certificate IV in Train Driving	17
TLI47121 Certificate IV in Rail Infrastructure	5
TLI50621 Diploma of Rail Operations Management	1

[49] Training.gov.au (as at 17 March 2025)

Rail occupational areas

Industry Skills Australia acknowledges that the ANZSCO/OSCA codes used by the VET system to identify occupations in the Rail industry do not always correspond 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. Job roles that have no clear ANZSCO/OSCA alignment are identified with a dash, '-'.

Occupational Area	ANZSCO Occupation Titles	OSCA Occupation Titles	Job Roles
1. Rail Operations	149412 Railway Station Manager, 149413 Transport Company Manager, 712918 Train Controller, 233311 Electrical Engineer, 639412 Transport Conductor	172532 Railway Station Manager, 172533 Transport Company Manager, 243332 Rail Signalling Engineer, 243233 Rail Engineer, 399937 Railway Network Controller, 591138 Transport Revenue Officer	Passenger Services Manager, Rail Freight Manager, Rail Maintenance Manager, Rail Operations Manager; Area Controller, Signaller, Terminal Coordinator, Yard Controller, Yard Coordinator, Resource Scheduler, Conductor, Passenger Train Guard, Train Conductor
	712918 Train Controller	399937 Railway Network Controller	Area Controller, Light Rail Controller, Network Control Officer, Network Controller, Train Controller, Tram Controller
	149412 Railway Station Manager, 899917 Railways Assistant, 451799 Travel Attendants nec	172532 Railway Station Manager, 461799 Travel Attendants nec, 899531 Rail Guard or Conductor, 899532 Railways Assistant	Customer Service Attendant/Assistant, Passenger Service Officer, Senior Customer Service Assistant/Officer, Station Assistant/Officer, Station Manager, Train Buffet Operator, Train Conductor, Station Masters
	731311 Train Driver, 731312 Tram Driver	711331 Freight Train Driver, 711332 Passenger Train Driver, 711333 Tram Driver, 741934 Railway Shunter	Electric Passenger Train Driver, Freight Train Driver, Heavy Haul Train Driver, Locomotive Driver, Train Driver, Heritage Locomotive Assistant, Steam Locomotive Fireman, Shunter, Freight Terminal Operator, Light Rail Driver, Tram Driver, Passenger Terminal Operator, Terminal Train Driver, Yard Terminal Driver

Occupational Area	ANZSCO Occupation Titles	OSCA Occupation Titles	Job Roles
2. Rail Infrastructure	821611 Railway Track Worker, 721914 Railway Track Plant Operator	741935 Railway Track Plant Operator, 821934 Rail Protection Officer, 821935 Railway Track Worker	Track Worker, Leading Hand, (Light) Rail Track Worker, Mobile Plant Operator, Plant Operator, Points And Crossings Builder, Rail Structures, Rail Tester, Rail Track Surfacer, Senior Track Maintainer, Specialist Track Installer, Structures Maintainer, Supervisor, Team Leader, Track Drainage Maintainer, Track Installer, Track Maintainer, Track Protection Officer, Track Welder, Tram Infrastructure Track Worker Level 1–3, Tram Infrastructure Track Worker Level 4, Turnout Builder, Way Gang Driver, Work Group Leader, Rail Track Surfacer, Principal Protection Officer
	721914 Railway Track Plant Operator	741935 Railway Track Plant Operator	Track Machine Driver, Track Vehicle Operator/Driver
	712917 Railway Signal Operator	732935 Railway Signal Operator	Mechanical Rail Signaller
3. Safety	-	-	Rail Safety Incident Investigator
	-	-	Rail Safety Manager
4. Rolling Stock Maintenance	899917 Railways Assistant, 821611 Railway Track Worker	821934 Rail Protection Officer, 821935 Railway Track Worker, 591999 Inspectors and Regulatory Officers nec (Track Inspector)	Maintenance Worker, Assistant to a Tradesperson, Maintenance Worker, Trades Assistant, Track Examiner

ANZSCO and ANZSIC Classifications

This section provides a detailed breakdown of the Australian and New Zealand Standard Classification of Occupations (ANZSCO) and the Australian and New Zealand Standard Industrial Classification (ANZSIC) as they have been used in this document to quantify occupations and industry. While OSCA replaced ANZSCO for use in Australia in December 2024, the underlying data (such as the Labour Force Survey, or the Occupation Shortage List) are yet to be updated. See **Rail Occupational Areas** for OSCA/ANZSCO mapping.

ANZSCO data is presented at two levels of detail. The highest level of detail (6-digit) is available for Census and Skills Priority List data while 4-digit data is available for the quarterly Labour Force data, Employment Projections and the Internet Vacancy Index and others.

ANZSIC data is also presented at two levels of detail. The highest level of detail (4-digits) is available for Census, Counts of Australian Businesses and IBISWorld Industry Class reports, that approximately align to 4-digit ANZSIC while 3-digit data is available or the quarterly Labour Force data, Employment Projections and others.

Note: 'nec' stands for 'not elsewhere classified' and 'nfd' stands for 'not further defined'. If the Census/Survey respondent didn't provide enough information to categorise the occupation/industry at the highest level of detail, 'not further defined' is used and the respondent is still counted.

ANZSCO Code	Title	Level of Detail
149412	Railway Station Manager	6-digit
451799	Travel Attendants, nec	6-digit
639412	Transport Conductor	6-digit
712917	Railway Signal Operator	6-digit
712918	Train Controller	6-digit
721914	Railway Track Plant Operator	6-digit
731300	Train and Tram Drivers, nfd	6-digit
731311	Train Driver	6-digit
731312	Tram Driver	6-digit
821611	Railway Track Worker	6-digit
899917	Railways Assistant	6-digit
7313	Train and Tram Drivers	4-digit
8216	Railway Track Workers	4-digit

ANZSIC Code	Title	Level of Detail
4700	Rail Transport, nfd	4-digit
4710	Rail Freight Transport	4-digit
4720	Rail Passenger Transport	4-digit
470	Rail Transport, nfd	3-digit
471	Rail Freight Transport	3-digit
472	Rail Passenger Transport	3-digit
5010	Scenic and Sightseeing Transport †	4-digit
501	Scenic and Sightseeing Transport †	3-digit

Stakeholder survey summary

The stakeholder survey was conducted between February and March 2025 and was designed to test the identified challenges and drivers and to capture proposed strategies from industry.

Table 7: Stakeholder Consensus on Workforce Issues

	Challenge/Driver	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
A	Demand for specialised skills in automation and digital skills are increasing		12.5%		50%	37.5%
	Occupational shortages are a challenge in operational, engineering, technical, and training roles		12.5%		37.5%	50%
	Retirements and technological advancements strain rail workforce		12.5%	25%	37.5%	25%
B	Improving the perception of Rail careers may help with recruitment challenges				50%	50%
	Increasing representation of under-represented groups strengthens the workforce		12.5%	25%	50%	12.5%
	The Rail sector must diversify recruitment to stay competitive				87.5%	12.5%
C	Improving national rail interoperability will enhance workforce mobility				62.5%	37.5%
	Some RTOs are not meeting industry expectations for training quality		12.5%	25%	37.5%	12.5%
	Streamlining training requirements can cut costs and downtime		12.5%	25%	12.5%	37.5%
D	Cross-JSC collaboration is crucial for building transferable digital skills			12.5%	62.5%	25%
	Digital transformation in Rail requires a shift in workforce skills				100%	
E	Limited RTO availability is restricting access to Rail qualifications			37.5%	12.5%	50%
	The Rail industry needs better training facilities, flexible delivery models, and cost-effective resources to meet workforce demands				37.5%	62.5%
	There is a shortage of qualified trainers				37.5%	62.5%
F	Cyber security is a growing challenge for the Rail industry			25%	62.5%	12.5%
	Investment is needed in cyber security skills			25%	62.5%	12.5%
G	Clean energy investment has the potential to boost regional economies			50%	50%	
	Decarbonising Rail will reshape industry skills and jobs			50%	50%	

Impact on organisations

Survey participants were asked about how the identified Key Challenges and Drivers affect their organisations. Below is a summary of the key insights they provided.

A. Critical occupational and skills shortages: The industry is struggling with major job and skill shortages. Significant challenges from unpredictable staff turnover, varied technology use, rising costs, heavy workloads, fear of automation, and lack of attention to trainer shortages.

B. Attraction of young and diverse talent: Challenging to attract young and diverse talent due to a narrow focus on blue-collar roles, high costs, lack of career progression, and an environment that may not feel inclusive to people from diverse backgrounds.

C. Lack of rail interoperability: Labour mobility is hampered due to state-based training and assessment, absence of national regulations, and the need for retraining workers to meet local requirements.

D. New skills needed for technical changes: New skills needed to address technical changes due to diverse state-level operations, bespoke digital systems, and varying stages of digital transformation among rail operators.

E. Rail training capacity falls short: Rail training capacity falls short of industry demands due to limited access to resources, unattractive wages for trainers, and a lack of experienced trainers, leading to poor training quality and possible safety risks.

F. Skills gaps for cyber security threats: This issue extends beyond rail, significantly impacting investment, innovation, and training in new technology due to cyber security processes that are needed to address the severe risk of network shutdowns.

G. New skills demand for clean energy: New skills demand will rise as rail shifts to clean energy, with specific needs varying by technology (e.g., hydrogen vs. battery electric) and impacting different areas of the industry.

Proposed solutions

Participants were invited to suggest solutions for addressing the identified drivers and challenges. Here is a summarised overview of their suggestions.

A. Critical occupational and skills shortages
- Work towards harmonised national systems for operations, safety, technology, and competencies, drawing on international models.
- Promote rail as a secure, well-paid career with clear progression pathways.
- Support and incentivise experienced staff to move into training and mentoring roles.

B. Attraction of young and diverse talent
- Promotion of technological and computer-based skills and showcasing these skills in the rail industry.
- To change community perceptions, engaging in diverse recruitment efforts, and support underrepresented groups within the workplace.

C. Lack of rail interoperability
- Aim to mandate national standards for rail, harmonise core training packages, and regulate safe working rules.
- Ensuring quality by investigating RTO course delivery methods and support RPL for easier jurisdiction transitions.

D. New skills needed to address technical changes
- Consultation with industry to harmonise and regulate core systems and processes, creating transition plans, maintaining transparency, and involving workers in the change process.

E. Rail training capacity falls short
- Increasing the use of simulators to enhance training.
- Advocacy to harmonise and create a unified industry by increasing the training program funding, raise trainer wages, and improve training quality.
- Expanding the access to TAFE for broader vocational training, supported by grants and subsidies for quality-focused RTOs.

F. Skills gaps for cyber security threats
- Increasing awareness for cyber breaches by developing underpinning qualifications and rail-specific postgraduate offerings, reducing reliance on internal upskilling and skilled migration.
- Advocacy for government support or funding for interventions to encourage and provide upskilling for the current workforce.

G. New skills demand for clean energy
- Supporting workforce transitions, such as retraining diesel mechanics for new roles like refrigeration mechanics, with TAFE as a key resource.
- Improving the investment in rail infrastructure to shift freight to rail, regional rail, and bringing freight lines back under government control.

Other key drivers

Participants were asked to share additional key drivers and challenges affecting skills and workforce development in their sector. Below is a summary of these critical issues.

- Addressing the challenges in state-based delivery of rail services as it hinders workforce mobility due to locally derived rules and procedures.
- Addressing the inconsistency caused by multiple rule books.
- Better alignment of training products (units of competency and qualifications) as they need updated and are not well aligned with current needs.
- Improving the training of Protection Officers for autonomous networks, currently relevant only in NSW and WA.
- Improving digital focus in customer service training.
- Better designed units of competency are needed and practical facilities like TAFE can help achieve this.

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/OSCA and ANZSIC.

- ANZSCO (Australian and New Zealand Standard Classification of Occupations) or OSCA (Occupation Standard Classification for Australia) categorises occupations based on skill level and specialisation.
- While OSCA replaced ANZSCO for use in Australia in December 2024, the underlying data (such as the Labour Force Survey, or the Occupation Shortage List) are yet to be updated. See Rail Occupational Areas for OSCA/ANZSO mapping.

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/OSCA 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).

Occupational shortage vs skills shortage
In this document, we distinguish between occupational shortages and skills shortages.

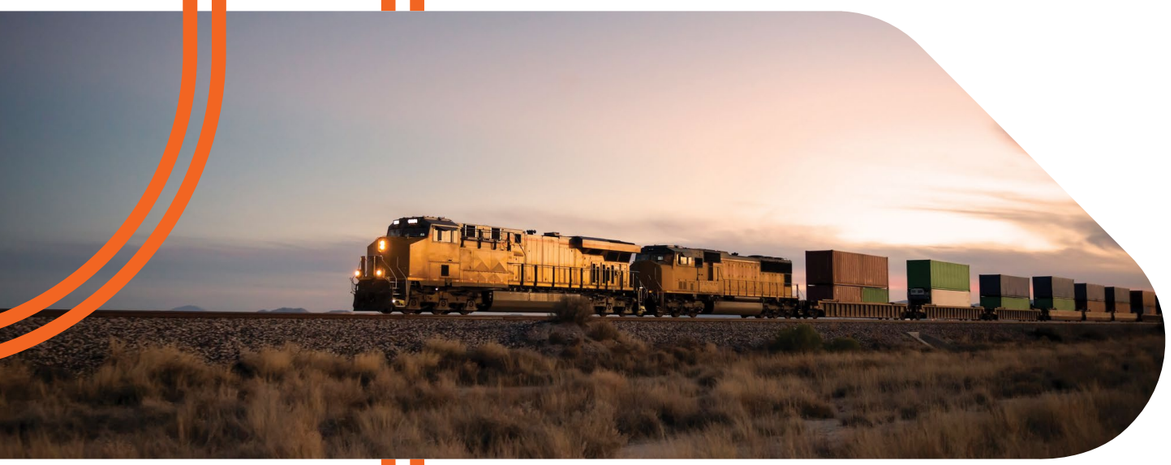
- Occupational shortage: This occurs when employers struggle to fill vacancies for a specific occupation or can't find employees with specialised skills needed in that occupation. Essentially, there aren't enough qualified people available to do the job.
- Skills shortage: This refers to a situation where the existing workforce does not possess the right skills to meet the demands of their sector or occupation. It's not about the number of employees, but about the quality or suitability of their skills.

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 according to historical Census distributions.

Water Transport Support Services is an industrial category that is split between the Maritime workforce (port and terminal operations sub-categories) and Transport and Logistics workforce (Stevedoring Services sub-category). This split is based on historical Census distributions.



Data gaps

1. Outside of Census years, the resolution of labour force data is not high. Rail has only two occupational categories at the 4-digit ANZSCO level. As a practical example, reported shortages in Train Controllers and Signalling Engineers cannot be corroborated since they are only available at 6-digit resolution, or not available at all.

   In December 2024, the **Occupation Standard Classification for Australia (OSCA) 2024,** replaced ANZSCO for use in Australia. OSCA has been established by the Australian Bureau of Statistics (ABS) through a comprehensive review of ANZSCO, conducted between July 2022 and December 2024.

   It will take some time for OSCA occupations, such as the breakdown of Passenger and Freight Train Driver specific occupations to appear in occupational data or shortage lists. Although the number of occupations counted at the 6-digit level will increase from 10 to 14, the Rail industry will continue to have only two occupational categories at the 4-digit level.

2. Available Rail industry workforce data does not provide sufficient detail related to current and future skills demand, and therefore the size of the expected gap over time is difficult to forecast. In ABS Labour Force data, the largest single cohort in the Rail industry workforce is 'Rail Industry, nfd' (not further defined), which is likely masking significant changes to passenger and freight transport. Without better quality real-time workforce data, it is difficult to match labour market responses and treatments to rail industry needs, and to articulate the business case for the national skills system to invest in rail skills and drive reform to benefit the rail industry. Industry Skills Australia will need to determine how better-quality real-time workforce data might be gathered to inform Rail Workforce Planning.

3. **Qualification Completions** should not be compared with enrolment numbers to ascertain completion rates. Instead, completion rates[50] are calculated by the National Centre for Vocational Education Research (NCVER), reflecting the proportion of qualifications that are ultimately completed. It's important to note that these rates are available for all qualifications collectively, but not for specific training packages or individual qualifications.

[50] NCVER 2024, VET qualification completion rates 2023, NCVER, Adelaide

Sources for infographics

Data	Source
Business No Business distribution by state %	ABS Counts of Australian Businesses
Female %	ABS Labour Force 2024
Kilometres of track Rail passenger journeys in 2021-2022	BITRE, 2023, Trainline 11
Aboriginal & Torres Strait Islander % With a disability % Workers with VET as highest qualification Workforce nearing retirements (aged 56-66) Median age Top 5 occupations	Census 2021
Rail infrastructure built $B 2022-2023	DITRDCSA, Transport Infrastructure Construction dashboard
GDP contribution $B 2024 Annual revenue $B 2023-2024	IBISWorld Industry Wizard
Qualification enrolments	NCVER, Total VET Activity 2023
Workforce Workforce distribution	JSA Employment Projections
Residential distribution of workers	JSA NERO 2025 and ABS Remoteness Areas - 2021
Rail Infrastructure Managers Rail Operators including freight & passengers	NTC, National Rail Action Plan
Rail networks	NTC, Advancing interoperability through regulatory reform
Registered training organisations (RTO)	training.gov.au

Appendix B Glossary of Terms

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 a person's existing skillset which are often closely adjacent to their current function, but can be geared toward a different path entirely

Skill Set - A single units 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

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

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

Workers - The term refers to occupational data (ANZSCO/OSCA)

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 to industrial data (ANZSIC)

Appendix C Methodology

The Workforce Plan adopts a comprehensive approach to understand and address workforce drivers and challenges in our industries. Our methodology is designed to be evidence based, industry supported and actionable, ensuring that the insights we generate are both relevant and practical.

1. Industry Consultation and Issue Identification
Throughout the year, ISA actively engages with industry stakeholders through consultations, roundtable discussions across states, territories, and regional areas, events such as the Supply Chain Leaders' Summit, and participation in relevant conferences and meetings. Insights gathered from these engagements are documented, reviewed, and categorised according to key labour market dynamics, such as skills shortages, occupational shortages, or occupations with attraction and retention issues. This structured identification of issues provides the context necessary to inform hypothesis development.

2. Generating Hypotheses
Using the categorised issues identified through industry consultations and events we develop hypotheses about the workforce. A hypothesis is an idea that is proposed so that it can be tested to see if it might be true. For example, we might hypothesise that the demand for truck drivers is high due to ongoing issues with attracting and retaining employees in these roles. Individual hypotheses are grouped into narrative sections, for example "A. Industry struggles to attract and retain workers". These hypotheses guide our research and analysis, helping us to focus on specific areas of interest.

3. Data and Research Support
To validate our hypotheses, we draw on both qualitative and quantitative sources, including labour market reports, academic studies, news articles and a wide variety of data. This step is crucial for grounding our hypotheses, ensuring that the problems we have identified are backed by solid evidence.

4. Stakeholder Survey
The stakeholder survey is designed to test our hypotheses with industry. For each hypothesis we:

- measure agreement among stakeholders
- gain an understanding of how the identified issues are impacting organisations
- capture suggested responses to the issues
- identify any additional key drivers not previously considered.

The insights gathered from stakeholders play a pivotal role in shaping the Plan. Their feedback not only tests the relevance of the identified challenges but also enriches the development of Proposed Actions with practical solutions.

5. Developing Proposed Actions
A key part of our methodology involves the Labour Market Dynamics and Potential Strategies Mapping tool. This tool allows us to:

- diagnose our hypotheses as having one or more 'symptoms', symptoms being categories of shortages/surpluses of skills and workers. These symptoms indicate how the labour supply is meeting demand
- identify potential strategies to respond to the identified issues
- evaluate existing initiatives, identifying any that are aligned with our hypotheses. This helps to ensure our Proposed Actions complement, rather than duplicate, existing efforts.

6. Incorporating Feedback
Prior to public consultation, our Strategic Workforce Planning Committees (SPWC) identified priority areas for investigation across sectors. This step is crucial for ensuring our findings and recommendations are relevant, practical, and aligned with the needs and priorities of industry.

7. Public Consultation
A draft of our report is made available for public consultation, allowing a broader audience to contribute their insights and feedback via a feedback form. This phase enables us to fine-tune our challenges/drivers and validate Proposed Actions through direct engagement with our stakeholders.

Industry Skills Australia

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