

RITC Industry Report WA Resources Sector: 2023

Summary

The Western Australian resources sector weathered many challenges in 2022 and ongoing into 2023, including a persistent tight labour market with widespread acute skills shortages. The resources sector had to adapt to higher capital and operational costs due to rising global inflation, supply-chain disruptions, and the sustained presence of COVID-19. The sector faced growing global geopolitical uncertainty, heightened by events such as Russia's invasion of Ukraine. Environmental, Social and Corporate Governance (ESG) was also one of the business opportunities and risks facing the sector along with license to operate, rising costs and impacts on productivity. Other ongoing challenges for 2023 may include supply-chain disruption, workforce challenges, ongoing and sustained work to create a more inclusive and diverse workforce, digital innovations, new business models and emissions reductions targets and strategies.

The unprecedented high job vacancy rates and depressed migration rates have exacerbated long-standing skill shortages in several critical areas for the resources sector placing new stressors in the local labour market such as housing affordability and availability (particularly in regional and remote areas).

While the unemployment rate remains relatively low, a persistent tight labour market is widespread and acute skill shortages are anticipated to be a part of the WA resources landscape going into 2023. With \$57 billion worth of major resources projects committed or under construction in Western Australia, and a further \$87 billion under consideration,¹ the outlook for the State's mining and resources sector is strong. Further, investment in minerals exploration (often a leading indicator for project investment) remains at record highs in Western Australia, rising by 20.7 per cent in 2021-22 to \$2.5 billion.²

Industry are heavily investing in both the upskilling of existing workers and commencing high numbers of apprentices and trainees to meet demand. The number of apprentices and trainees has increased, climbing to a record of more than 47,700 by the end of June 2022. This is the first time the number has reached beyond 45,000 in 10 years.³

*'Australia's economy and labour market face complex challenges. While the unemployment rate is at historic lows, a tight labour market has also brought challenges including widespread and acute skill shortages. Even before COVID-19, nominal wage growth had been weak and real wages had not risen significantly for around a decade. The ongoing effects of COVID-19, high inflation, rising interest rates, global economic uncertainty and disrupted supply chains further compound these challenges, which are holding back the potential of our economy and country'*⁴

This report seeks to examine:

- Factors affecting current and future supply and demand of labour for the resources sector in WA.
- Training strategies that industry has used or may consider using to meet the skills and workforce needs.
- Regionally specific issues/ opportunities; and
- Emerging issues/ opportunities.

Western Australian Labour Market

The 2022-23 the State Budget confirmed Western Australia domestic economy grew by 7.2 per cent over the two years of the pandemic.⁵ Goods-producing industries accounted for 60 per cent (\$242.6 billion) of Western Australia's Gross State Product (GSP) in 2021-22, including:

¹ Government of Western Australia, [WA Economic Profile](#) - December 2022, Department of Jobs, Tourism, Science and Innovation, December 2022

² Government of Western Australia, [WA Economic Profile](#) - December 2022, Department of Jobs, Tourism, Science and Innovation, December 2022

³ <https://www.jobsandskills.wa.gov.au/news/record-results-continue-apprenticeships-and-traineeships-wa>

⁴ Treasury [Jobs and Skills Summit Issues Paper](#) 17 August 2022

⁵ WA State Budget 2022-23 [Fact Sheet](#)

- mining (46 per cent or \$186.8 billion)
- construction (5 per cent or \$21.0 billion)
- manufacturing (5 per cent or \$18.8 billion)
- agriculture, forestry, and fishing (3 per cent or \$10.8 billion)⁶

Western Australia accounted for 59.3 per cent of Australia's mining industry gross value added in 2021-22. WA's mining industry gross value-added rose 8.3 per cent to \$186.8 billion in 2021-22 and WA's minerals and petroleum sales rose 9.5 per cent to \$231.5 billion over the same period.⁷

Mining sector employment in WA (up 19,898 or 15.9 per cent) recorded the largest rise in average employment between the December quarters of 2021 and 2022.⁸ At the same time as WA recording high employment growth in the mining sector and high export value in minerals and petroleum sales, with population growth slower than in the pre-COVID-19 period. Historically, there has been a link between WA's low unemployment figures and jumps in primary commodity prices indicating the strong link between the resources sector and the WA labour market (see below).

WA's population was 2.79 million in 2021-22, making up 10.7 per cent of Australia's population. WA's population rose 1.3 per cent in 2021-22, above growth of 1.2 per cent in 2020-21, but below annual growth of 1.4 per cent over the past 10 years.⁹ WA's higher population growth in 2021-22 was largely due to a turnaround in net overseas migration, which was negative in 2020-21 due to the COVID-19 pandemic.

With high economic growth in the past two years, lower population growth and low unemployment rates, businesses across many sectors in WA were left struggling to fill vacancies.

Western Australia experienced an extremely high period of employment growth from mid-2020 to 2022. In January 2023, the unemployment figure of 3.6 percent (seasonal adjusted)¹⁰ was a slight increase on the average unemployment figures across the 2022 calendar year of 3.4 per cent. Total employed in January 2023 in the WA labour market 1,511,093 which was slightly down from 1,511,655 in the 2022 calendar year.¹¹ February 2023 saw an increase in unemployment in WA to 3.9 per cent (total employed 1,518,100 higher than January) and participation rate remaining unchanged at 69.0 per cent.¹²

The demand for skills in the WA resource sector is at record levels, not only in the mining industry but also oil and gas, construction, logistics and civil projects. Demand is driven by both construction, high levels of project activity as well as sustaining operations, and ongoing maintenance and shutdown work across existing projects. Competition within the local market for labour has resulted in increased turnover and wage pressures (see below).

Nationally, from a major occupational group perspective, employers had the most difficulty filling vacancies for Technicians and Trades Workers, with just 44 per cent of vacancies filled in 2022 (down from 50 per cent in 2021).¹³ Jobs and Skills Australia reported shortages within this broad group of occupations appear to be persistent over time with the proportion of vacancies filled has been particularly low during 2022 for:

- Automotive and Engineering Trades Workers (down from 43 per cent in 2021 to 27 per cent in 2022);
- Construction Trades Workers (down from 45 per cent in 2021 to 32 per cent in 2022); and
- Electrotechnology and Telecommunications Trades Workers (down from 54 per cent in 2021 to 36 per cent in 2022)¹⁴.

The number of occupations with skills shortages has nearly doubled in the past year according to the National Skills Commission's (NSC) 2022 Skills Priority List. It shows 286 assessed occupations were in

⁶ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, February 2023

⁷ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, February 2023

⁸ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, February 2023

⁹ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, February 2023

¹⁰ Australian Bureau of Statistics [Labour Force](#), Australia Reference Period January 2023

¹¹ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, February 2023

¹² Australian Bureau of Statistics [Labour Force Survey](#) February 2023

¹³ Jobs and Skills Australia [Labour Market](#) Update February 2023

¹⁴ Jobs and Skills Australia [Labour Market](#) Update February 2023

national shortage, compared to 153 occupations in 2021. Of concern for the resources sector is 47 percent of all trade and technical occupations are in shortage, up from 42 percent at the same time last year. The ongoing shortage of trade and technician workers has reduced companies' capacity to undertake or complete a range of projects as well as business as usual activities.¹⁵

Treasury released an Issues Paper in August 2022 ahead of the National Jobs Summit and stated:

*'The Australian labour market is currently operating at close to full employment, with the unemployment rate at its lowest level in almost 50 years.'*¹⁶

A National Australia Bank (NAB) survey of 800 small and medium enterprises across a broad range of industries, conducted from 17 May to 9 June 2022, found 35 per cent of those surveyed said labour shortages were having a "very significant" impact on their business. Additionally, 34 per cent expected a "very significant" impact over the next 12 months.¹⁷

Jobs and Skills Australia Labour Market Update February 2023 listed the top 20 occupations most in demand in Western Australia based on monthly average of internet job vacancies from October to December 2022.¹⁸

Top 20 occupations in demand	IVI job ads
Registered Nurses	790
Metal Fitters and Machinists	758
Motor Mechanics	726
Electricians	582
Civil Engineering Professionals	495
Mining Engineers	460
Retail Managers	458
Structural Steel and Welding Trades Workers	437
Child Carers	432
Generalist Medical Practitioners	411
Chefs	411
Truck Drivers	408
Construction Managers	399
Software and Applications Programmers	353
Drillers, Miners and Shot Firers	309
Aged and Disabled Carers	302
Earthmoving Plant Operators	287
ICT Business and Systems Analysts	187
Early Childhood (Pre-primary School) Teachers	159
Database and Systems Administrators, and ICT Security Specialists	77

Jobs and Skills Australia Labour Market Update February 2023 listed the top 10 vacancy rates (job ads as a proportion of employment) from the regional skills pressure indicator, for larger employing occupations that have been assessed as in shortage for the Skills Priority List. Occupations with the highest vacancy rates are heavily concentrated around mining engineers and medical professions, mostly in regional areas.

¹⁵ National Skills Commission [2022 Skills Priority List Key Findings Report](#)

¹⁶ Treasury [Jobs and Skills Summit Issues Paper](#) 17 August 2022

¹⁷ Financial Review 20/07/2022 [Permanent skilled workers to be top priority in immigration revamp](#)

¹⁸ Jobs and Skills Australia [Labour Market](#) Update February 2023

Top 10 regions/occupations by vacancy rate (November 2022), for occupations in shortage on the 2022 Skills Priority List¹⁹

Region	Occupation	Vacancy Rate (%)
Western Australia - Outback (North)	Mining Engineers	38.0
Western Australia - Outback (South)	Mining Engineers	29.4
Newcastle and Lake Macquarie	Mining Engineers	22.7
Far West and Orana	General Practitioners and Resident Medical Officers	18.1
Queensland - Outback	Chefs	17.6
Latrobe - Gippsland	Occupational Therapists	17.5
Latrobe - Gippsland	Enrolled and Mothercraft Nurses	17.3
Central Queensland	Mining Engineers	17.2
Australian Capital Territory	Other Miscellaneous Technicians and Trades Workers	16.9
Queensland - Outback	General Practitioners and Resident Medical Officers	16.0

Notes: Regions presented in this table are Statistical Area 4 (SA4) regions, with the exception of capital cities, where relevant SA4 regions are combined to present an overall result for that capital city.

January 2022, saw increases in demand concentrated in labourers (+11 per cent), and technicians and trade workers (+9 per cent)²⁰. Stakeholders also reported chronic shortages in key white-collar occupations across engineering roles (particularly mining engineers), earth sciences, metallurgists, underground surveyors, maintenance planners.

Other occupations that have been reported to be in acute shortage include maritime workers. Mining and LNG are export commodities that rely on shipping. This has been affected by global impact on international shipping crews and on critical restrictions on the mobility of domestic maritime workers, such as marine pilots. Domestic maritime workers are drawn from a small pool, and like some of the highly specialised roles across the resources sector, rely on unique skillsets and many years of accredited experience – meaning there is no short-term pathway fix. A shortage or short term ‘shock’ of labour availability in either area could have substantial impact on trade – and in turn revenue – flows out of the resources export industry.

Stakeholders also reported a critical shortage of train drivers, who are essential for the pit to port value chain in mining but also for the grain industry in WA.

Across WA there is a shortage of trade in construction, riggers, scaffolders, crane operators, concreters, steel fixers. Occupations associated with freight and logistics, drillers, driller offsiders, shot firers and belt splicers. Many of these occupations are assigned a Skills Level 4 and can only access migration pathways through Labor Agreements and not via Skilled Migration pathways (see below).

Based on a combination of projects currently under construction, new projects reaching final investment decision and a consistent demand for shutdown and maintenance workers, the requirement for workforce across exploration, mining, construction, infrastructure and shutdown and maintenance is staggering. Low unemployment rates in Western Australia are also a very strong indicator that the labour market has effectively been ‘tapped out’ with supply of employees coming to WA from interstate and overseas markets not able to meet current demand.

As stated previously, the number one issue for the Resources sector in WA is related to labour shortages and capacity constraints, with anecdotal evidence of some businesses’ output being constrained by an inability to obtain appropriate labour. The concern is that if the issue becomes more widespread, it could impact investment in the near term.

¹⁹ Jobs and Skills Australia [Labour Market](#) Update February 2023

²⁰ <https://bcec.edu.au/assets/2022/03/Monthly-Labour-Market-Update-January-2022.pdf>

Intrastate Migration

Western Australia has traditionally relied upon the eastern states as a source of recruitment for employees to either relocate to Western Australia for work or to FIFO into WA for work. From April 2020 until March 2022, WA was closed to much of the nation and to international skilled migration after hard border restrictions came into force because of COVID-19. One of the most notable impacts felt by the West Australian resources sector due to COVID-19 was workforce and mobility constraints.

Stakeholders report while the lifting of COVID border restrictions in WA and nationally brought relief, the impact of the prolonged closures is still lingering due to inability to increase the supply of labour and as the demand for skilled personnel continues to increase. COVID border impacts were particularly felt across the contractor workforce in WA.

Historically, in WA, the in-migration flow was higher than the out-migration flow in 1998 and 2008, but the trend changed in 2018 as WA experienced a net out-migration of around 9,500 people²¹. Prior to 2020, interstate workers had previously come to WA from all jurisdictions in Australia, with Queensland the largest source state. New South Wales and Victoria had similar levels of interstate workers in WA. Queensland is viewed as a 'mining state' with a similar workforce to WA including professional occupations (mine managers, engineers, earth sciences, trades, and semi-skilled and unskilled workers). Stakeholder consultation also reported Queensland provided a large percentage of WA's oil and gas workers – predominantly Cert III level production workers.

Net Interstate Arrivals and Departures year ending June 2022²²

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT
Interstate arrivals	98,428	85,407	142,389	31,013	42,847	15,763	17,177	21,782
Interstate departures	141,879	102,640	86,971	29,988	32,056	15,979	20,193	25,100
Net interstate migration	-43,451	-17,233	55,418	1,025	10,791	-216	-3,016	-3,318

By way of comparison, WA experienced -224 net increase of arrivals from interstate in March 2020 quarter, rising to 1205 in December 2020 quarter and 1639 in the March 2021 quarter illustrating the impact that the COVID pandemic had on net patterns of interstate arrivals into WA²³. To note, is the large net interstate migration flows into Queensland from NSW in the 2022 period.

In 2022, with the WA borders open, stakeholders reported the relocation of employees was assisted through offering a range of incentives for interstate workers willing to make the move to WA – including relocation costs, assistance to relocate families, employer-provided housing, rent and/or mortgage assistance, vehicle allowances and personal travel incentives. Although several interstate relocations have occurred; it is not in the numbers required to fill the vacancies that business are experiencing.

Western Australia is currently competing for skills and labour across public infrastructure on projects in other states. Australia's infrastructure is booming, with several significant projects progressing across the nation.

²¹ Bankwest Curtin Economic Centre [Bridging the Gap: Population, Skills and Labour Market Adjustments in WA](#), September 2022

²² Australian Bureau of Statistics, [National, state and territory population](#) June 2022

²³ Australian Bureau of Statistics, [National, state and territory population](#) March 2021

WA's \$1.84 Billion Metronet is in competition with 11 other significant infrastructure projects on the eastern coast of Australia.

The 12 largest infrastructure projects across Australia being²⁴:

1. WestConnex (NSW), \$16 Billion
2. Sydney Metro (NSW), \$12 Billion
3. Melbourne Metro Tunnel (VIC), \$11 Billion
4. Melbourne to Brisbane Inland Rail (National), \$9.3 Billion
6. West Gate Tunnel (VIC), \$6.8 Billion
7. Cross River Rail (QLD), \$5.4 Billion
8. Western Sydney Airport (NSW), \$5.3 Billion
9. Melbourne Airport Rail Link (VIC), \$5 Billion
10. Western Sydney Infrastructure Plan (NSW), \$4.1 Billion
11. M80 Ring Road Upgrade (VIC), \$2.25 Billion
12. METRONET (WA), \$1.84 Billion

Infrastructure Australia reports the five-year pipeline of major public infrastructure projects is valued at \$237 billion - an increase of \$15 billion in the last 12 months and equivalent to 6.7 per cent growth. At the same time, wide-ranging supply pressures have continued to challenge the industry's capacity to meet demand, increasing risks to on-time and on-budget project delivery.

Labour scarcity is the single biggest issue faced by construction companies. The cost of construction materials has risen by an average 24 per cent in the last 12 months. As of October 2022, public infrastructure projects, including small capital projects face a shortage of 214,000 skilled workers. In 2023, labour demand is projected to increase 42,000 to a peak of 442,000. This is more than double the projected available supply²⁵.

Overlapping occupations engaged in infrastructure work in the eastern states that are in competition with the resources sector in Western Australia are for example: Civil engineers, electrical engineers, environmental professionals, geologists, geophysicist, and hydrologists, geotechnical engineers, drillers, maintenance planners, production engineers, structural engineers, mechanical engineers, crane operators, rail track workers, civil plant operators, electricians, general construction labourers²⁶.

In the previous capital expenditure boom experienced by WA prior to 2013, WA was not in competition with projects on the eastern seaboard and wages in WA were very attractive and were an incentive to either relocate or FIFO into WA. This meant major construction projects such as Wheatstone and Gorgon, mining expansion projects and major shut down works benefited from recruitment from other states and from 457 visa holders. It has been reported remuneration in other states is now comparable to what an employee can earn in WA so there is no real incentive to FIFO and have disruptions to family life. COVID-19 has shifted people's priorities and to re-examine their work/life balance thereby opting to return home every day to their family rather than commuting to another state for work.

In engagement with industry over 2022, Stakeholders reported:

'Nationally we have seen very little difference to borders opening as people don't want to move back to WA on FIFO basis. The reasons given have been:

²⁴ [A Complete List of Major Infrastructure Projects in Australia](#)

²⁵ Infrastructure Australia [Infrastructure Market Capacity 2022](#) – Risks to project delivery increase as 5-year investment climbs by \$15b, 14 December 2022

²⁶ Infrastructure Australia Infrastructure Workforce and skills supply October 2021

- *People fear getting locked into WA if borders close even though they know this is a small chance now they don't want to take the risk.*
- *There is no real difference in pay between the west and east coast and for our operations there is parity between the two coasts in terms of pay – there is not enough incentive and not worth the hassle of FIFO.*
- *Flights and air travel has been very disrupted.'*

'The labour market in eastern states is very busy – people have jobs. 12 years ago, when recruiting interstate, the eastern seaboard was not as busy, and WA were doubling people's salaries. Now the white-collar salary differential is only about 20 per cent more.'

'...we have found quality candidates in Queensland, but they are requesting national FIFO which we can't accommodate.... Candidates who are relocating are going into temporary accommodation then sourcing own accommodation. Relocating to the regions or Perth.'

'Interstate candidates are willing to relocate when kids have finished school.'

'If candidates are relocating, they want to have partner employed in WA as well. We are trying to have partner career conversations as well but can't guarantee both to have employment.'

'Some interstate candidates have worked for the company before and are returning after borders were closed and locked out.'

One stakeholder reported employees from other states are acutely aware of the impact of commodity cycles on their profession and if there is a down-turn and they have relocated to WA, they will find themselves without work having moved to a new state and this is deterring potential employees from considering a permanent move to WA.

'Also, still a sense of being burnt in the last downturn – people lost their jobs in 2011/2013 period and are hesitant to come back.'

'Air travel from eastern states is difficult but much better than when borders were closed.'

One contracting stakeholder reported airfares have risen to such a high level towards the end of 2022, they had to revise their interstate FIFO workforce policy. This reflects a shortage of flights and air crew and demand in capacity forcing flight prices to increase by 2-3 times their previous amounts making interstate FIFO for contracting staff unfeasible for new hires.

Stakeholders report there is reluctance from people living on the eastern seaboard returning to an interstate FIFO lifestyle. This could be because people are seeing the value of being home every night in their own state, not wanting to travel due to issues with Airlines, and early in 2022, the fear for potential border closures again. Additional reasons that have been given by stakeholders include lack of extended family and support networks, lack of available childcare in the regions, moving away from personal networks, complex child custody arrangements, ability to travel back to visit family, and the perceived isolation of Perth from the rest of Australia. Further, workers are choosing to focus on infrastructure projects that are happening in their state. There are issues around suitability and affordability of housing in WA which is contributing to the skill shortages in regional areas. Regionally across WA, there are issues surrounding childcare, schooling and medical services impacting individuals desire to move regional (see below). There are valid reasons why individuals and their families may not want to make the move permanently to Western Australia. Given the sharpened focus on mental health and wellbeing that has come with COVID-19, these circumstances should also be taken into consideration.

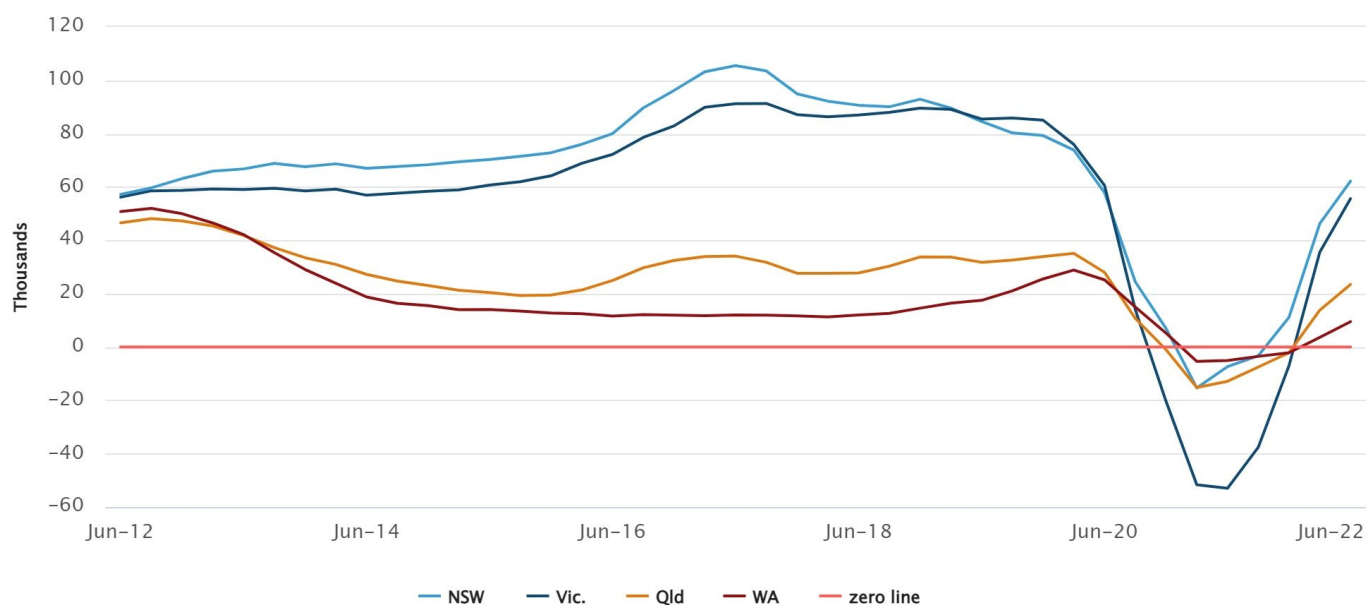
Migration

Industry has been heavily investing in recruitment of new to industry, diversifying the talent pool and both upskilling of existing workers and the addition of high numbers of apprentices and trainees to meet demand. However, the demand for skilled and unskilled labour is outstripping the available supply in a tight local and national labour market which is placing pressure businesses. In 2014, a labour market report remarked that

'the flow of skilled workers into WA has been essential to the sustained economic growth experienced by the state over the course of the resources boom'²⁷ and this remains unchanged nearly a decade later. The demand for labour in WA is at a high enough level to argue that it is possible to find ways to balance the training of local apprentices and access to skilled migration so they can sit comfortably side by side.

Net overseas migration into WA has always been significantly higher than net interstate migration into the state. The following graph illustrates the number of net overseas migrants into WA reached a peak in 2012 and then experiencing a declining trend with a steep drop due to the COVID-19 pandemic²⁸.

Graph 5.1 Net overseas migration(a) – larger states(b) – year ending – quarterly



a. Estimates from September quarter 2021 onwards are preliminary. See revision status on the methodology page.
b. Based on the states with the largest volume of migrant arrivals and migrant departures.

Source: Australian Bureau of Statistics, Overseas Migration 2021–22 financial year

29

The pattern of net overseas migration into WA by country of birth has changed over the last 10 years with a decline in pattern of arrivals from the UK and an increase in arrivals from India and the Philippines³⁰.

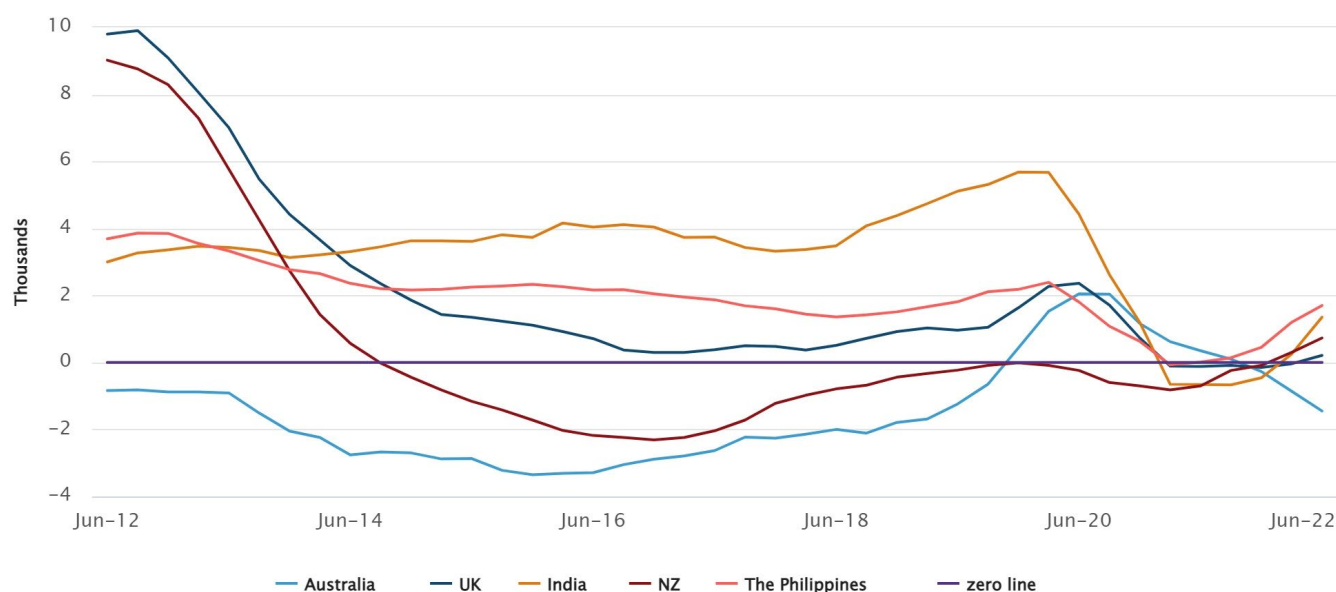
²⁷ Cassells, R., Dockery, A.M., Duncan, A.S., Gao, G., Leong, K. and Mavisakalyan, A. (2014), [Workforce and Skills. Western Australian labour markets in transition](#), Bankwest Curtin Economics Centre Focus on Western Australia Series, Issue #3, August 2014.

²⁸ Dockery, M., Duncan, A., Mavisakalyan, A., Chris Twomey, C and Vu, L. [Bridging the Gap: Population, Skills and Labour Market Adjustments in WA](#), Bankwest Curtin Economics Centre Focus on Western Australia Report Series 16, September 2022

²⁹ Australian Bureau of Statistics [Overseas Migration Statistics on Australia's international migration, by state and territory, country of birth, visa, age and sex](#), 2021-22 financial year

³⁰ Australian Bureau of Statistics [Overseas Migration Statistics on Australia's international migration, by state and territory, country of birth, visa, age and sex](#), 2021-22 financial year

Graph 5.7 Net overseas migration for WA – top 5 countries of birth(a) – year ending – quarterly



a. Top 5 countries of birth by the sum of migrant arrivals and migrant departures in year ending June 2022 in Western Australia.

b. Estimates for 2021–22 are preliminary. See revision status on the methodology page.

Source: Australian Bureau of Statistics, Overseas Migration 2021–22 financial year

Stakeholder reported over the past two years there has been an inflow of ex-pats moving back to WA. Stakeholders have also observed an exiting of talent from Australia, from individuals seeking international exposure. This is particularly true from early mid-career white collar professionals.

Stakeholder report post WA borders opening in 2022 sourcing skilled and unskilled labour from a range of countries including the Philippines, India, Indonesia and to a lesser extent, countries associated with mining activity in Africa for a variety of occupations including but not limited to Heavy Diesel Fitters, Auto Electricians, Boiler Makers, Welders, Fitters, Composites Technicians, Belt Splicers, Drillers and Machinery Operators. Companies are looking to the UK as a pathway for skilled migration for electricians.

Some of these occupations were reporting an acute shortage prior to Covid 19 and were difficult to source from a local and national talent pool. The re-opening of international and state borders has provided some relief, however, this has largely not yet eased pressure on demand and access to labour, and industry expects these constraints to continue in the short to medium term. For a skilled tradesperson the training lead time is on average four years and with additional time to gain experience, the high number of apprentices in training will not fill the immediate and acute skills gap. Therefore, skilled migration although essential to fill crucial skills gaps, is seen a last resort option.

Stakeholders report sourcing highly skilled and experienced professionals from international talent pools, particularly for energy transition projects and for professional occupations that have been in critical shortage for several years where the local talent pool has been 'tapped out' and the training pipeline into the profession is also declining, for example for geologists and mining engineers.

Treasury reported ahead of the National Skills Summit in August 2022:

'Well-targeted migration can help boost our workforce and economic growth. It is estimated that the average migrant to Australia makes a lifetime contribution to GDP of \$2.3 million while the average primary skilled independent visa holder contributes \$4.6 million. However, the current migration system has also become difficult to administer and difficult for potential migrants to navigate, due to piecemeal changes that have accumulated over time.'

- There are now over 70 unique visa programs in Australia, each with their own criteria and subcategories. Hundreds of individual labour agreements and multiple skilled occupation lists with changing eligibility further complicate the system.
- These programs do not always deliver on all their objectives in a timely manner. For example, only around half of short-term Temporary Skill Shortage visas – designed to address labour shortages – are processed within three months³¹

Australia's borders reopened to foreign visa holders on 21 December 2021, and WA Borders opened on 3 March 2022. A huge backlog in processing visas occurred reportedly owing to Home Affairs resources diverted towards policing the border and processing travel exemptions during the pandemic.³² The visa backlog, once at almost one million visas was aimed to be down to 600 00 by the end of 2022³³.

In outcomes from the Skills Summit in 2022, Treasury committed to provide \$36.1 million in additional funding to accelerate visa processing and resolve the visa backlog and to increase the permanent Migration Program planning level to 195,000 in 2022-23 to help ease widespread, critical skills shortages³⁴. However, Industry remains concerned this number does not reflect the requirement for the WA resources sector now and into the next 12-24 months.

Stakeholders report sourcing labour from overseas is an option of last resort as the visa system remains overly difficult to navigate, resource and time heavy, visa processing times remain lengthy and sourcing labour from overseas is an expensive exercise, not just from an administrative perspective but also with relocation and set up costs. Businesses that go down the path of skilled migration do so out of desperation and incur significant additional costs.

Stakeholders report the replacement of the 457-subclass visa in 2017 with the Temporary Skills Shortage (TSS) visa led to tighter eligibility criteria and higher costs compared to the 457 visas. These changes have led to increased complexity in the system, created confusion and has removed the pathway for permanency for many occupations. Australian visa conditions and pathways to permanent residency are less competitive against some similar destinations. Where occupations have no pathway to permanent residency, stakeholders report they are unable to attract skilled individuals wanting to come to Western Australia, as they are restricted to being in WA for only two years and this does not provide the certainty, they require planning for themselves and their families.

ANZSCO as a foundation for Australia's skilled temporary and permanent migration programs has been widely reported as backward looking and inflexible. ANZSCO has become outdated as it has not been revised for almost 18 years, which reduces its effectiveness as the basis for the current skilled migration program and is not a suitable classification system of multiskilling, emerging occupations or for specialist roles³⁵. Recent announcement by the ABS that it is working with other government agencies to progress a targeted update of ANZSCO is welcomed.

Stakeholders have also reported they support the requirement to make every effort to hire local candidates. However, feedback is that the requirement for Labour Market Testing (LMT), particularly in a time of 'full employment' can be onerous and a time-consuming administrative requirement.

LMT requirements and the proof required depends on the stream an employer is nominating under. Stakeholders report LMT that requires the employer to advertise the position through the JobActive website which in many instances, the applicants applying frequently do not meet the minimum experience or qualifications to do the job. Stakeholders have suggested the audience for JobActive is not the best fit for skills, experience, and resilience the resource sector businesses are trying to target.

³¹ Treasury [Jobs and Skills Summit Issues Paper](#) 17 August 2022

³² Financial Review [Permanent skilled workers to be top priority in immigration revamp](#) Jul 20, 2022

³³ <https://minister.homeaffairs.gov.au/AndrewGiles/Pages/3-million-visas-processed-backlog-down-to-755000.aspx>

³⁴ [Australian Government Jobs and Skills Summit September 2022 – Outcomes](#)

³⁵ Parliament Of The Commonwealth Of Australia [Final Report of the Inquiry into Australia's Skilled Migration Program](#) August 2021 Canberra Joint Standing Committee on Migration

As many different businesses advertise vacancies on a regular basis and for lengths of time and in the public domain, without success prior to considering an offshore option, requiring them to advertise in adherence with strict LMT measures results in additional bureaucracy.

Stakeholders have also noted the overall visa cost includes a Skills Australia Fund Levy.

Migration, whether it be interstate or international, temporarily or permanent requires housing market adjustments. Stakeholders have reported utilising the services of relocation agencies to help source housing for staff moving to WA from international destinations, working with local real estate agents to source housing in the regions and in Perth, purchasing mini vans to help newly arrived employees get to work, helping arrivals establish bank accounts, helping with furnishings as well as other assistance upon arrival.

WA real estate is: *'being supported by ongoing demand and a shortage of housing across the board and this is likely to continue ... there are now 6,993 properties for sale in Perth, compared to the corresponding week last year when there were 7,975 properties for sale ... this clearly shows a decline in housing stock Asking rents in Perth have soared, with the average weekly rental for a house jumping 15.2 per cent to \$530 in the final quarter of 2022, the largest annual increase of all the capital cities ... if new listings remain low, we'll see the number of properties for sale continue to decline and the housing shortage worsen.'*³⁶

Regional WA contains some of the most unaffordable locations in the State, and many areas are suffering from an acute shortage of rental accommodation. A shortage of affordable rental options has major implications for the local economy as they cannot attract and retain employees ³⁷.

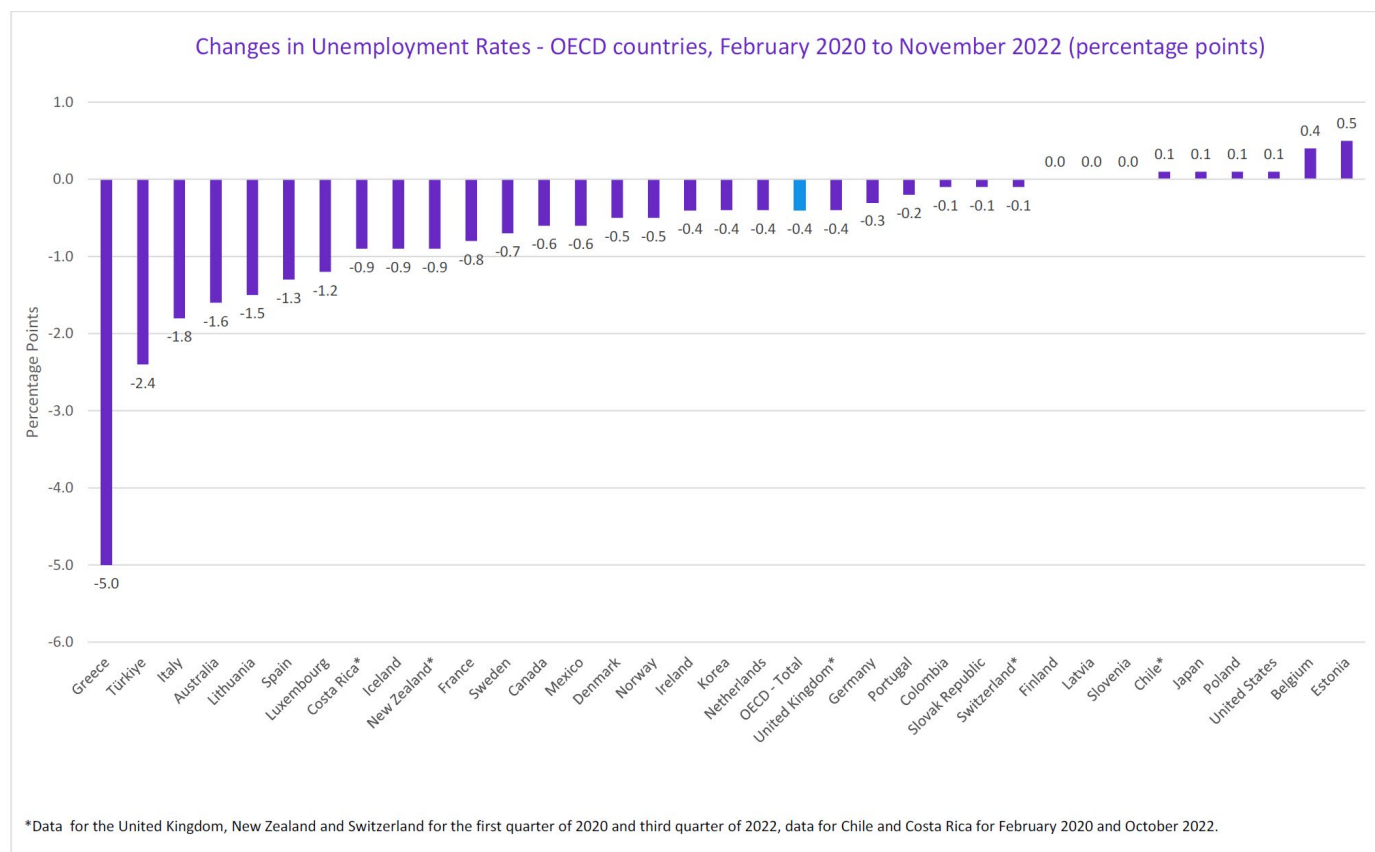
International Labour Markets

Recent OECD data points toward similarly tight labour markets in many other countries, highlighting increasing global challenges for employers in finding workers with the required skills. The graph below shows that while two-thirds of OECD nations currently have an unemployment rate that is below the level recorded in February 2020 (prior to the COVID-19 pandemic), Australia's unemployment rate decline is among the larger ³⁸.

³⁶ Australian Property Investor [Perth property market standing alone as 2023 growth prospect](#) 13-2-2023

³⁷ Crowe, A., Duncan, A., Amity James, A., and Rowley, S. [Housing Affordability In WA BankWest](#) Curtin Economic Centre Focus on Western Australia Report Series, No.15 June 2021

³⁸ Jobs and Skills Australia [Labour Market](#) Update February 2023



OECD reports the labour market recovery from the COVID-19 pandemic has been strong among advanced countries and Labour shortages have been widespread particularly in Australia, Canada and the United States. The report finds that in the information and communication sector, labour shortages are particularly acute in EU countries such as France and Italy and in the UK rising shortages in waste, water and energy-related industries and the United States in manufacturing and extractive industries³⁹.

The Motor Trades Association reported to the Joint Standing Committee on Migration that:

“We are witnessing extremely strong movements in terms of mobility of the workforce in other countries. Mechanics are in short supply in Europe, in the UK and invariably in a number of other countries, as are other automotive professions. We are aware of a lot of activity in terms of competing jurisdictional efforts to try to attract those people here⁴⁰.”

New Zealand is also facing similar labour shortages and low unemployment figures. In December 2022, New Zealand’s unemployment figures were reported at 3.4 per cent⁴¹. The New Zealand energy sector is facing a severe talent shortage which is expected to get worse. Currently the New Zealand Energy Sector consists of a workforce of 8,000 people and 25 per cent of the current workforce will retire in the next decade⁴². To meet the growing demand (from electrification etc) New Zealand’s energy workforce will need to increase by 50 per cent by 2035⁴³. To meet the increased demand and cover those retiring or moving out of the sector, this equates to over 700 new recruits needed per year⁴⁴. Energy Academy New Zealand

³⁹ Causa, O., Abendschein, M., Luu, N., Soldani, M., and Soriolo, C. OECD [The Post-Covid-19 Rise In Labour Shortages](#) Economics Department Working Papers No. 1721

⁴⁰ Parliament Of The Commonwealth Of Australia [Final Report of the Inquiry into Australia's Skilled Migration Program](#) August 2021 Canberra Joint Standing Committee on Migration

⁴¹ <https://www.stats.govt.nz/indicators/unemployment-rate/>

⁴² Waihangā Ara Rau - [Mahere Whakamahinga, Workforce Activation Strategy](#).

⁴³ PWC - [Building Prosperity Through the Energy Transition](#)

⁴⁴ PWC - [Building Prosperity Through the Energy Transition](#)

reports that 86 per cent of companies have significant concerns about their ability to meet their own talent requirements, and 84 per cent agree the talent pool in New Zealand is too small to meet the industry's needs.

New Zealand has contributed to Australia migration and currently sits 7th in the ranking of countries by migration outcomes by citizenship behind India, China, UK, Philippines, Nepal and Vietnam in 2021-22⁴⁵

	2017-18	2018-19	2019-20	2020-21	21-22
New Zealand	5,295	6,209	4,997	3,978	4,421

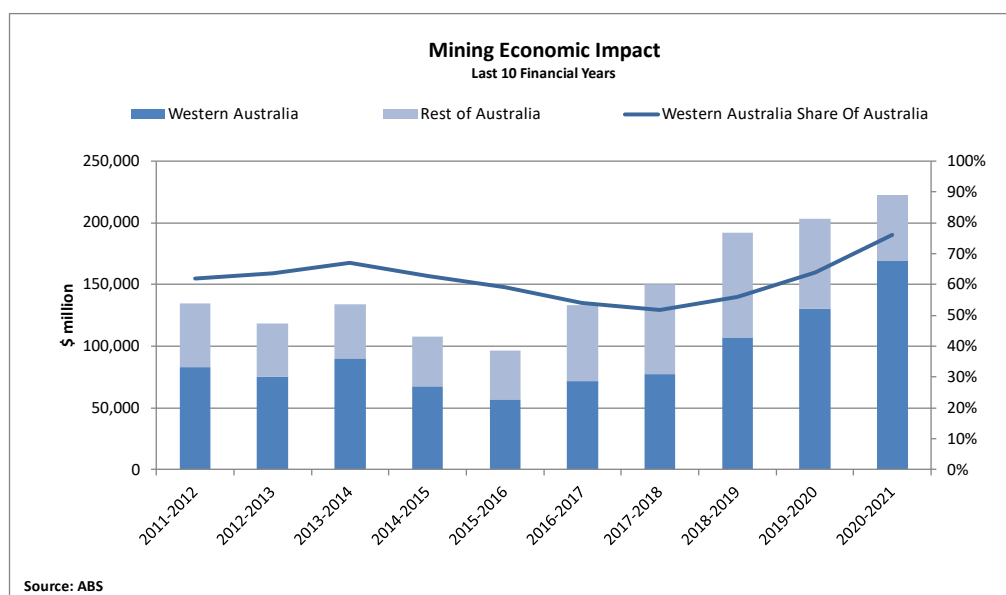
Australia is competing with destination countries like Canada regarding skilled migrants. The pathways to permanency in Australia raised uncertainty for some potential migrants, and that the perceived lack of barriers to permanency in Canada had led to it 'becoming a really, really attractive destination for skilled migrants⁴⁶'. Stakeholders have also reported the Australia high tax rates make it harder to attract foreign workers (or get Australian expats to return).

There is still reported to be a lingering hesitancy by international candidates to relocate to WA because of past border policies.

Commodities

Driving the demand for labour in WA has been a direct result of an increase in global demand for commodities that are exported from the state and associated increase in commodity prices and increased investment in exploration activity, and mining infrastructure across the state. The 2022-23 State Budget confirms Western Australia domestic economy grew by 7.2 per cent over the two years of the pandemic, the strongest in the nation, and among the best performing in the world.

Over the last decade, WA mining has grown its economic contribution from \$83,263 Million in 2011-12 to \$169,578 million – and increase from 36 per cent to 49 per cent⁴⁷



The iron ore industry is a large part of Western Australia's economy, accounting for an estimated 29 per cent of the State's gross state product in 2021-22. In 2021-22, iron ore accounted for 55 per cent of the

⁴⁵ Department of Home Affairs [2021 – 22 Migration Program Report Program year to 30 June 2022](#)

⁴⁶ Parliament Of The Commonwealth Of Australia [Final Report of the Inquiry into Australia's Skilled Migration Program](#) August 2021 Canberra Joint Standing Committee on Migration

⁴⁷ <https://www.dmp.wa.gov.au/About-Us-Careers/Latest-Statistics-Release-4081.aspx>

value of Western Australia's exports of goods. In 2021-22, iron ore accounted for 85 per cent of Western Australia's royalty revenue and 25 per cent of State government general revenue⁴⁸.

Demand for iron ore has been driven by the rapid urbanisation and industrialisation in China and other emerging economies. Urbanisation (the movement of people from rural areas to towns and cities) and industrialisation (the development of manufacturing industries) requires investment in new housing, factories, and transport infrastructure – all of which use steel in their construction⁴⁹.

The global demand and overall high iron ore prices triggered a massive amount of investment in mines and mining infrastructure across WA. As prices for commodities increased, mining firms were keen to increase production. To extract more commodities, mining firms expanded existing mines and developed new mines:

- Rio Tinto's Gudai-Darri project delivered its first ore in June 2022 and will ramp up production to 43 million tonnes a year in 2023 (with a potential expansion to 70 million tonnes a year). Rio Tinto started developing its Western Range project in early 2023, with annual production of 25 million tonnes of iron ore expected to start in 2025. Rio Tinto will also complete an Order of Magnitude study in 2023 to develop the Rhodes Ridge deposit to produce 40 million tonnes of iron ore a year post-2030.
- BHP completed its development of South Flank in May 2021, which is ramping up production to 80 million tonnes a year by 2024. BHP is studying options to develop its Western Ridge deposits adjacent to Mt Whaleback. The project would add 20 million tonnes a year of production, replacing production volumes from the Orebody 24 mine.
- Fortescue Metals Group (FMG) developed Iron Bridge (Magnetite) Stage 2, which is due to start operations at the end of the March quarter 2023.
- Construction on Mineral Resources Limited's (MRL) Onslow Iron project began in August 2022. Iron ore shipments from the project are expected to start in December 2023.

The expansion of existing mine sites and development of new mine sites had driven demand for a construction workforce, for an operational workforce and for shut down and maintenance.

At the same time as iron was in an expansion phase; WA was experiencing increased exploration, an increase in expansion export sales of other minerals such as gold, development and export of rare earth and critical minerals and infrastructure development.

The value of Western Australia's gold sales rose 4.7 per cent to \$17.4 billion in 2021-22, due to increases in both the average price and sales volumes in 2021-22⁵⁰.

Global demand for minerals used in rechargeable batteries (this includes lithium, copper, zinc, nickel, cobalt, graphite, manganese, alumina, tin, tantalum, magnesium, and vanadium) has increased because of their use in electronics, magnets, energy storage and electric vehicles. Global electric car sales have more than doubled to \$6.6 million in 2021, mainly driven by China. Battery electric vehicles accounted for 71 per cent of global electric car sales in 2021. In 2021, there were 16.5 million electric cars on the road globally, of which 68 per cent were battery electric vehicles. Western Australia's battery and critical minerals are mainly exported to China, other markets in Asia (Japan, South Korea), Europe (Norway, Germany, Spain) and the United States. The value of Western Australia's battery and critical minerals sales rose 117 per cent to \$15.3 billion in 2021-22⁵¹.

Direct full-time equivalent employment in Western Australia's battery and critical minerals industry rose 20 per cent to 15,491 in 2021-22. The estimated value of exploration expenditure for battery and critical minerals in Western Australia rose 55 per cent to \$673 million in 2021-22.⁵²

⁴⁸ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, January 2023

⁴⁹ Reserve Bank of Australia, [Australia and the Global Economy](#) – The Terms of Trade Boom

⁵⁰ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, March 2023

⁵¹ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, January 2023

⁵² Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, January 2023

The value of Western Australia's LNG sales rose 129.6 per cent to \$37.5 billion in 2021-22, due mostly to an increase in the average price in 2021-22⁵³.

Exploration expenditure can be a leading indicator for investment in minerals and petroleum projects. Western Australia accounted for 63 per cent of Australia's minerals exploration expenditure in 2022. The value of minerals exploration expenditure in Western Australia rose 8.2 per cent to \$2.5 billion in 2022, mainly due to increases in iron ore, other minerals (including lithium and other critical minerals), nickel and cobalt exploration. In 2022, the value of exploration expenditure in Western Australia on:

- iron ore rose 23.1 per cent to \$649 million.
- other minerals rose 39.6 per cent to \$331 million.
- nickel and cobalt rose 24.3 per cent to \$267 million.

Western Australia accounted for 46 per cent of Australia's petroleum exploration expenditure in 2022. The value of petroleum exploration expenditure in Western Australia fell 8.6 per cent to \$447 million in 2022⁵⁴.

In 2022, stakeholders reported increased exploration activity was putting pressure on occupations such as Exploration Managers, Exploration Geologists, Field Assistants, Geophysicists, Drillers, and Driller Offsiders. Across drilling services, occupations reporting chronic shortages included Drill Fitters, Auto Electrician's and Heavy Diesel Mechanics. The Australian Drilling Industry Association has noted one of the biggest impediments the industry faces are a lack of skilled drillers and offsiders⁵⁵.

Projects

Western Australia accounted for 24 per cent of Australia's private new capital expenditure in 2022, including 59 per cent of Australia's mining industry new capital expenditure and 9 per cent of Australia's non mining industries new capital expenditure. The mining industry accounted for 72 per cent of Western Australia's private new capital expenditure in 2022. In 2022, the value of Western Australia's new capital expenditure in the:

- mining industry rose 15.7 per cent to \$25.7 billion.
- non-mining industries rose 4.1 per cent to \$10.0 billion.

The value of Western Australia's private new capital expenditure in the mining industry is expected to rise 8.0 per cent in 2022-23, but then fall 10.3 per cent in 2023-24. The value of Western Australia's private new capital expenditure in non-mining industries is expected to rise 8.1 per cent in 2022-23, but then fall 17.2 per cent in 2023-24.

Western Australia had \$57 billion of major resource projects under construction or committed and \$87 billion under consideration in September 2022⁵⁶.

Supply Chain

WA's economy is being affected by a series of disruptions to the production and distribution of goods and services: higher shipping prices, delays in the transport of materials and products, extreme weather events in Australian and around the world and, war in Europe leading to a higher rate of inflation.

Across 2022 and continuing into 2023, supply chain issues were widely reported by stakeholders. International shipping bottle necks increased sea freight costs and caused significant delays in the international movement of goods. These factors have had mixed effects on operators in the Transport sector. On one hand, transport operators can charge higher prices due to surging demand and limited capacity -

⁵³ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, March 2023

⁵⁴ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, March 2023

⁵⁵ [Australasian Drilling Magazine](#) Official Journal of the Australian Drilling Industry Association and New Zealand Drilling Federation October/November 2022

⁵⁶ Government of Western Australia [WA Economic Profile](#) Department of Jobs, Tourism and Innovation, March 2023

particularly for sea freight transport. However, customer satisfaction has deteriorated as businesses and end consumers have endured longer wait times for certain goods. Stakeholders in the WA resources sector in 2022 reported higher freight costs, advance purchase of supplies to ensure continuity in supply and many stakeholders across industry sectors report having to stockpile supplies.

In transport and logistics stakeholders are also reporting a shortage in Heavy Vehicle/oversize escorts from Main Roads which are impacting mining and delaying movement of machinery and large equipment movement to site. As a labour pool consisting of casual based work with stop-start continuity it is not competitive in this labour market to fill the roles.

The distribution of costs in the overall supply chain have had important implications and effects on a business's overall profitability and margins. Increased costs of materials, supplies, utilities, labour scarcity, wages and salaries have all put pressures on margins and this is being felt particularly in the contracting space where there may be limited ability to pass on increased costs to their customer.

War in Ukraine

Disruptions caused by Russia's invasion of Ukraine and the ensuing economic sanctions on Russia have severely affected global markets. Prices of oil, gas and certain agricultural products have risen, intensifying inflation pressures and threatening food security in some developing economies. The war in Ukraine has also affected markets in relation to metals that are produced in Russia which are indispensable to supply chains of modern manufacturing production. Aluminium, nickel, palladium, and vanadium are among those raw materials. Trade in potash – an essential input in fertiliser production – has also been affected⁵⁷. These raw materials are also produced by Australian mining companies. Higher energy prices (Russia invasion of Ukraine caused global oil prices to spike, made worse by OPEC's decision not to increase production) lead to petrol and diesel prices increasing which hit Australian consumers. However, for some Australian producers of commodities there have been significant benefits via higher prices in the short term⁵⁸.

Prices of aluminium and nickel reached their 10-year high in February 2022. The price of potash saw an especially pronounced peak when in February 2022 it jumped almost 80 per cent compared to the previous months. Prices of palladium and vanadium have seen rapid spikes since January 2022. Both aluminium and nickel prices saw first signs of volatility in February, then reached their all-time highs at the end of the first week of March, and then prices collapsed. Both prices are nevertheless still higher than before the start of the Russian aggression. Palladium followed a very similar pattern⁵⁹.

Technology

Technology including robotics and automation have been introduced into the resource sector operations to enhance all aspects of mine to market operations. This includes autonomous vehicles and other mobile equipment, remote-controlled operational, autonomous drilling and blast, increased use of drones and robotics.

Technology enables operations to:

- maintain safe, predictable, and productive operations.
- drive productivity improvements and realise greater margins.
- have real-time data-driven insights and decision-making; and
- help drive inclusion and diversity by providing greater opportunities for roles that were traditionally labour intensive.

⁵⁷ OECD [The supply of critical raw materials endangered by Russia's war on Ukraine](#) 4 August 2022

⁵⁸ <https://www2.deloitte.com/au/en/blog/economics-blog/2022/ukraine-crisis-economic-impacts-australia.html>

⁵⁹ OECD [The supply of critical raw materials endangered by Russia's war on Ukraine](#) 4 August 2022

The use of technology in the resources sector has required utilisation in new and different capacities as well as creating a range of new and emerging roles in operational control, predictive maintenance, data processing, mine planning and among others.

There is an increasing demand for Data and Digital literacy skills across all phases of the mining value chain. These skills can be expected to increase in demand into the future and play an important role in enhancing decision-making and optimising everyday work.

Across industry and academic literature, there is consensus that skills requiring greater degrees of task creative intelligence, social intelligence, perception, and manipulation will be increasingly important for occupations in the sector⁶⁰: Future skills that need to be embedded in occupations for technology and innovation in the sector include:

- Change Management
- Collaboration
- Complex Stakeholder Engagement
- Creativity
- Data Analysis
- Data and Digital Literacy
- Design Thinking
- Stakeholder Analysis
- Strategic Planning

Technological innovations have required industry to partner with the education and training sector to upskill, reskill existing workers and to develop the necessary pipeline of new talent.

Stakeholders report finding the right people with the right skills, along with retention and a training system that is keeping up with the technological changes and future skills requirements, are the biggest challenges. Cultural changes area also required within companies to embrace technology - without taking your people on the digital journey, implementing new technology successfully can be a challenge.

Decarbonisation

The 2015 Paris Climate Agreement and net zero emission targets has posed significant opportunities and challenges for the WA resources sector. The global transition to clean energy has driven demand for the battery minerals required for the adoption of electric vehicles and battery-based energy storage systems. Western Australia has substantial reserves of minerals used in the manufacture of rechargeable batteries. In terms of lithium in WA, the state is the global leader in hard rock lithium production (41 per cent of global supply), the second largest producer of cobalt and has the largest potential resource of Class 1 nickel. It also produces non-battery minerals used in the manufacture of electric vehicles and energy storage systems such as rare earths elements. Western Australia is the world's second largest producer of rare earths (16 per cent), with nearly a quarter of global reserves⁶¹.

As discussed previously, this has placed pressure on the availability of skills and labour in WA for the exploration, infrastructure development, mining operations, and export of mining battery minerals. WA is facing a chronic shortage of:

- exploration geologists.
- experienced drillers for exploration work and drilling more generally.

⁶⁰ Minerals Council of Australia [The Future of Work: the Changing Skills Landscape for Miners A report for the Minerals Council of Australia](#) February 2019

⁶¹ Chamber of Minerals and Energy [Lithium and Battery Minerals](#)

- experienced mining engineers, and engineers more generally.
- metallurgists.
- all trades and machinery operators, with high turnover in the truck driving space.
- minerals laboratories particularly in the sample prep and laboratory technicians.
- trades in the shut down and maintenance contracting space, maintenance planners and belt splicers.

WA is home to an emerging global hydrogen industry. Hydrogen offers a pathway to decarbonisation with enthusiasm building around hydrogen as a new fuel source that could redefine global approaches to hard-to-abate sectors. Hydrogen is a fast-emerging alternative with great potential as an energy-dense and clean burning fuel. Hydrogen fuel cell electric vehicles (FCEVs), for example, are gaining traction for commercial use.

Early skills mapping has identified core skills that appear consistently across the different stages and types of hydrogen projects, including requirement for process engineers with a specialised knowledge of hydrogen process operations, and will also include plumbing, electrical work, engineering trades and the safe transportation of hydrogen. Development of hydrogen infrastructure will require a demand for new and traditional energy skills and significant demand for construction workers.

Different skills and occupations will appear in relation to the various hydrogen production processes, transportation and end uses, from maintenance on hydrogen powered vehicles through to ship loading for hydrogen export. Workers with existing skills will need to be upskilled to become familiar with the properties of hydrogen, handling processes, and the pressures at which it needs to be stored. Experts in hazardous areas management, on-site emergency response and quality assurance will also need to develop specialist capabilities to work with hydrogen.

New and emerging roles in the hydrogen industry that have been identified include but are not limited to:

- Electrolyser Technicians,
- Fuel Cell Technicians,
- Hydrogen Dispenser Technicians for refueling,
- Specialist Hydrogen Process Operators, and
- On-site hydrogen specialist emergency teams⁶².

The emerging hydrogen industry in WA will require skills and workforce needs that will change over time as major hydrogen projects move from concept to construction, into operation and as hydrogen vehicles become more widely adopted and refuelling stations come online. Many existing trades and disciplines that exist in WA are readily transferable to the hydrogen industry. While the industry continues to develop, the exact skill sets required for the hydrogen work force will need to be better understood.

Many of the occupations required by the hydrogen industry are expected to be sufficiently captured by existing VET training packages. Some training packages may need to be reviewed through national processes to include hydrogen-specific amendments. For example, the Gas Industry Reference Committee (IRC) began work on reviewing training Package materials and developing skills sets in 2021 to address skills for the safe use and handling of hydrogen technologies.⁶³

In November 2021, The Gas Industry Training Package (Release 3.0) was endorsed by the Skills Ministers for implementation. The Gas IRC with support from Technical Advisory Committees, developed six new units of competency, three new skill sets and updated 13 units. The new units of competency and skill sets have been drafted specifically for hydrogen gas, and the existing units were updated to allow for hydrogen

⁶² Queensland Government [Hydrogen Industry Workforce Development 2022-23](#)

⁶³ Gas Industry Reference Committee [Industry Outlook 2021](#)

contextualisation as well as other gases. The revised training package addresses the skill needs of gas technicians working with hydrogen.

'In response, Australian Industry Standards and the Gas IRC undertook a review of all gas industry job roles and assessed the level of hydrogen skills and awareness required. What was evident was that because of the high level of skill within the Australian gas industry, the requirement was not for new Units of Competency to be created but simply for workers to be equipped with an increased awareness of the different properties of hydrogen'.⁶⁴

In addition, the revisions to VET training packages, a range of degree-qualified occupations, particularly in engineering, will be required by the hydrogen industry, and strong higher education pathways relevant to hydrogen will be important.

The zero emissions landscape has resource companies implementing decarbonisation strategies with the challenge and opportunity being how to ramp up decarbonisation efforts meaningfully and cost-effectively. This includes deploying renewable energy on site and producing carbon-neutral raw materials that meet new demands of customers for zero-emissions products. Renewable energy strategies will include pairing large-scale solar, gas turbines, and wind with electric vehicles, low-carbon fuels, and hydrogen — plus associated technologies such as battery storage and fuel cell technology. Planning is required across the entire footprint of assets and offers real opportunities for resource companies to achieve sustainability goals and to make significant inroads in improving efficiencies and reducing cost of production and addressing the future facing skills a workforce required to implement these strategies⁶⁵.

Integrating smart infrastructure to collect and monitor data that provides operational awareness is critical to optimise the performance of mining assets. Smart 'decarbonising' infrastructure is a combination of automation, sensor technology and control devices paired with data analytics and increasingly, artificial intelligence (AI) and machine learning. By allowing mine operators to actively monitor and manage systems in real-time, these systems empower operators to make smarter operational decisions, preventing disruption, eliminating unnecessary waste, and saving time and money⁶⁶. This has seen an increase in the demand for recruitment of professionals with data analytic skills. The installation of solar PV and battery storage systems have grown significantly. The workforce will require ongoing skills development in the operation and maintenance of renewable systems and technologies.

A new energy system will require new skills, training and education with a more responsive and agile training sector that is able to offer electrical mechanical skills in combination, a way of upskilling existing workers in an agile way with policy responses to enable this. Additionally, a training sector that can build a new talent pipeline that is fit for purpose for the emerging needs of the sector including the skills required to work in more complex team environments and involved in diagnostic, data driven environments is required. Workforces are now increasingly comprised of multi-generational, multi-skilled and diverse individuals. A future-ready and agile workforce with transferable skills will enable greater workforce mobility and increased efficiency across multiple industries.

Pipeline

New to Industry

The unique and often remote operating environment of the resources sector requires a level of resilience, work readiness and site readiness. The orientation of a student from a school-based learning environment, university pathway or from a non-resources background to a workplace requires the learning and attainment of a number of soft skills, collectively termed 'work readiness' and site readiness.

Maturity, situational awareness, work hardening (e.g., daily work routine and task expectation setting), safety preparedness, cultural alignment, resilience, and finance management are common traits. Additionally, an

⁶⁴ Australian Industry Standards [Industry Outlook 2022](#) : Energy & Utilities

⁶⁵ Black & Veatch Corporation [Decarbonization Pathways: Beyond Renewables: Impactful Decarbonisation of Australia's Mining Sector](#) , 2022

⁶⁶ Black & Veatch Corporation [Decarbonization Pathways: Beyond Renewables: Impactful Decarbonisation of Australia's Mining Sector](#) , 2022

ability to communicate in an industry setting (with colleagues of varying ages, cultural backgrounds, and seniority) and life skills (success setting and asking questions) are reported. This skills base is complex and often formed with years of experience in a workplace, which is difficult for a young person or new to industry to achieve. However, due to the high-risk nature of operating in heavy industries, attainment is crucial to ensure worker safety, health, and well-being. Consequently, industry have broadly reported a work readiness gap in younger cohort and new to industry wanting to enter the sector.

Site readiness encompasses the transition from a standard working environment to operating on a resources sector site. Within this definition, workers need to adapt to hardened working conditions including, following strict procedures, long working hours (successive 12-hour shifts), night shift, living away from home, working in isolation from other team members, hot and dusty conditions, working in remote environments with restricted digital connectivity, taking charge of their physical health (e.g., nutrition, hydration, injury management) and mental health awareness.

When asking industry stakeholders what site readiness and industry preparedness looked like, responses included:

- Prior work experience (preferably in heavy industries)
- Knowledge of what to expect on site (e.g., hours and conditions)
- Relevant tickets and licenses
- Ability to follow procedures and complete procedural paperwork.
- Manual handling skills and awareness (e.g., importance of stretching before work)
- Knowledge of the importance of hydration and nutrition
- Appropriate mobile phone use
- Drug and alcohol awareness
- Individual alignment with business culture and values

In response to this 'work readiness' gap industry has implemented several initiatives, often incorporated into new to industry, diversity, and indigenous engagement programs. Some stakeholders conduct pre-employment screening and testing, induction programs including, pre-site programs including the use of simulators and training programs to align culturally and behaviourally new to industry participants.

There are several unskilled pathways to enter the resources sector for example, dump truck, trades assistant, drillers offsider, utilities worker which require no qualifications but have work ready and site ready barriers to employment. They can be used as a steppingstone to other career pipelines in mining companies and through contractor employment to mining companies.

Stakeholders report taking on new to the sector in greater numbers than previously over the past 18-24 months to fill labour shortages. However, the requirements for mentoring and supervision for new to industry employees places an uphill burden on existing workers and supervision as there is only so much capacity to train new entrants. There is also a health and safety concern about the volume of new to mining being on site with no previous experience.

New to resources pathways are often used by resource companies to build diversity in their business and many companies report proactively recruiting women into non-traditional resource jobs, older cohorts, defence pathways and aboriginal employees through entry level pathways.

The attraction of higher paid entry level roles has led to some industry concerns that a younger cohort is seeking unskilled pathways rather than longer term apprenticeship opportunities, which may be initially lower paid during training but ultimately lead to a skilled occupational outcome.

"Younger applicants are seeing dollar signs but not career opportunities, and they are jumping for labouring jobs such as Trades Assistant and haul truck jobs rather than taking traineeships and apprenticeship pathways."

- Companies have reported constrained availability of skilled and experienced workers has also led to a higher percentage of inexperienced personnel being recruited, resulting in reduced productivity and increased risk.
- The talent pipeline for new entrants is shrinking – some industries reporting it is difficult to attract entry level positions, particularly when they are in competition with higher paying FIFO and mining roles.
- Downturn in safety and productivity with workers who are qualified but less experienced or skilled and with the increase in volume of new entrants to mining. Introducing new under-experienced and under-supervised entrants into high-risk work environments presents both immediate safety risks. The Brady Review of all mine site fatalities in Queensland from 2000 to 2019 highlighted the dire consequences of inadequate training and supervision⁶⁷.

Pre-Apprenticeships

Pre-apprenticeships are offered by most schools with delivery completed by both TAFE Colleges, private RTOs and with Trade Training Centres. Pre-apprenticeships are universally highly valued by both industry and schools with benefits including providing base skills, supporting work readiness, and acting as screening tools for aptitude and interest in trade pathways. Completion of a pre-apprenticeship program is highly regarded by industry as it highly correlates to a post-school candidate's employability.

Pre-apprenticeship programs are popular within the student cohort, and participation in these courses can be highly competitive with demand often outstripping the service delivery on offer. Training providers have also reported training workshop places and availability of training staff are at or nearing capacity, largely due to the increased uptake of apprentices.

Other barriers for pre-apprenticeships can be a misalignment between school timetabling, block release programs and day release options for learners to attend workplace as availability and timetabling may be restrictive and inflexible for industry.

As a heavy industry, the unique and remote operating environment of the resources sector can be a barrier to VET in Schools participation and school student placement more broadly. Legislative requirements around age, supervision and safety are primary barriers to engaging youth in resources workplace arrangements, alongside access to mentoring resources and candidate work readiness.

Businesses with workshop capacity have reported success in hosting pre-apprenticeship work placement students for short durations. This workshop environment (commonly metro-based) enables these businesses to safely recruit and skill apprentices of younger ages in a well-controlled environment, provided candidates meet other selection criteria. Importantly, whilst successfully hosting school-aged learners, businesses note other limitations such as supervision needs.

Increasing apprenticeships

Across the board, the resources sector has increased the volume and number of trainees and apprenticeships since 2019 onwards. This has been greatly assisted by government incentives. The issue stakeholders report with increasing apprenticeship and traineeship number is the supervisory requirements on site. Retention rates and completion rate for younger apprentices can be in the lower range and it is a long pathway to solve an immediate labour and skill issue with an apprenticeship taking over four years to complete. In some regional areas, stakeholders report sending apprentices to Perth to complete training as there is no locally available training solution. This has not been ideal, particularly for more diverse cohorts and in times when there have been lockdown situations leaving apprentices stranded in hotels in Perth.

Increasing the number of apprentices and trainees also requires increasing supervisory requirements. Where there is a shortage of skilled occupations further up the chain, stakeholders report for every trained and qualified person they can take on more apprentices but where they have shortage of qualified personnel

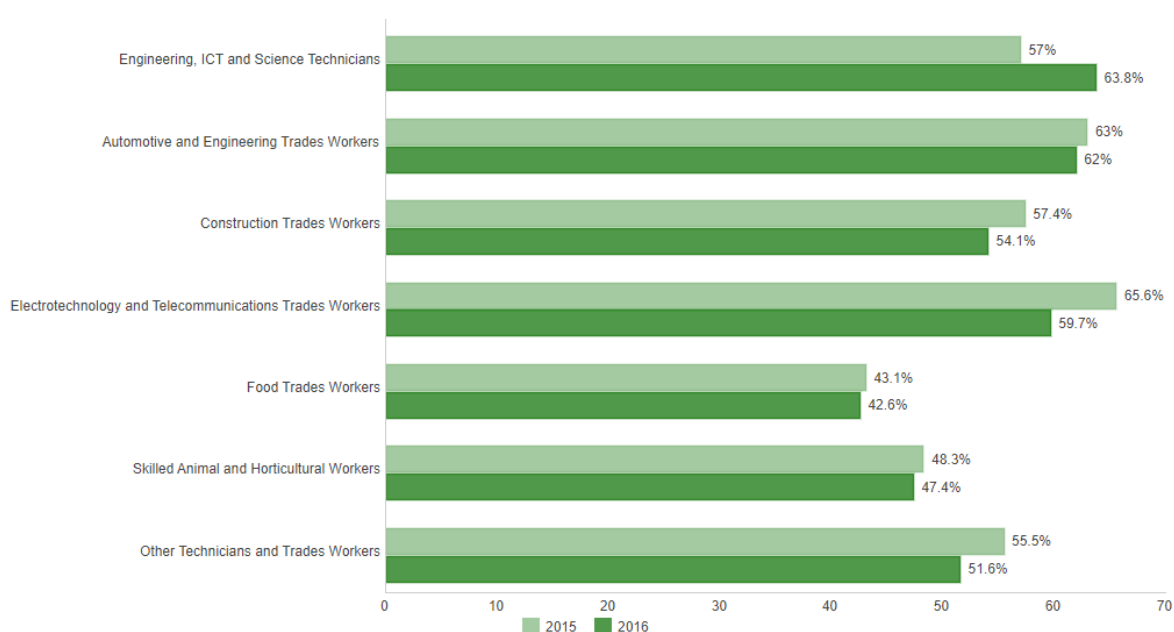
⁶⁷ <https://documents.parliament.qld.gov.au/tableOffice/TabledPapers/2020/5620T197.pdf>

and skills shortages, this puts pressure on their ability to take on apprentices and trainees in the volume they would like.

“Apprenticeships more difficult to train only in workplace for first 1-2 years because of supervision required in right ratio. Underpinning skills taught in workplace require 1:1 ratio of trainer/ supervisor to learner. 3-4th year OK on the job.”

Stakeholders are reporting qualifications require updating to keep up with technological changes in the workplace. Stakeholders have also reported administrative issues with training plans being issued, being overly long and first year apprentices training being delayed due to a shortage of trainers in the VET system. Stakeholders raise concerns that these bottlenecks in the training system due to increased demand and pressure, timely access to training plan and commencing training may lead to retention issues with apprentices.

Individual completion rates of non-trade occupations for those commencing in 2015 and 2016⁶⁸



NCVER Statistical Report from 2021 shows 63 per cent of Engineering, ICT and Science Technicians and 62 per cent of Automotive and Engineering Trades Workers who commenced in 2016 completed their training, the highest rates of all trade occupations. Stakeholders report although completion rates are higher in apprenticeships associated with the resources sector, they would still like this outcome to be improved to maximize the pipeline of those available to enter the workforce overtime so they can contribute to the skilled labour workforce. Stakeholders would also like to see maximized uptake of adult apprenticeship opportunities as more mature apprentices entering the training system often have better completion rates, bring existing experience and competencies to the role and are often able to compete in a shorter duration when the appropriate supporting structures are in place to recognise existing competencies.

Stakeholders have reported there can often be a negative perception of VET pathways for school-based learners with a preference and higher value placed on higher education qualifications and outcomes. This is reportedly not necessarily the case in the regions where resources companies are closer to the community and a younger cohort can see the direct benefits gained from a vocational education pathway and career in the resources sector and where a higher education pathway may be more difficult to achieve.

⁶⁸ NCVER Statistical report [Completion and attrition rates for apprentices and trainees 2020](#) 15 July 2021

Stakeholders have also reported they would like to see more career pathway information relevant to VET qualifications that are specific to the resources sector for trades that may be less well known for example: mechanical fitting and belt splicing and for traineeships in industries that may be less well known such as the drilling industry, minerals laboratories and construction material testing and for occupations that currently have limited availability of qualifications pathways attached to them such as the composites industry and poly welding to name a few.

The House of Representatives Standing Committee on Employment, Education and Training launched an inquiry into the perceptions and status of vocational education and training (VET) in Australia. The inquiry will examine the choices of Australian students, employers, and educators, and investigate ways to improve the perceptions of the VET sector and its role in providing opportunities for Australians from all walks of life. Submissions to the enquiry closed on the 1st of March 2023.

VET in Schools as an alternate entry pathway to university

The utilisation of VET as an alternate pathway into university is steadily gaining more recognition. In WA partnerships exist between some schools and universities, linking VET in Schools programs to Undergraduate programs. VET has a valuable role to play in skills development and the practical learning pathway is of benefit to students with university aspirations. These programs and partnerships not only provide a credit of university entry and support student choice in tertiary study selection.

This cross-sectoral approach has helped support VET in Schools program enrolments and improve parent perceptions of the value of VET. However, most of these pathways are relatively new.

University Pathways

Over time WA's ATAR population has declined: In 2016, WA recorded 13,540 students doing ATAR, yet in 2022 the cohort comprised just 9643 students - an almost 20 per cent drop.⁶⁹ This drop is concerning as ATAR is the predominant pathway of entry into engineering (and other science related) undergraduate degrees.

The patterns of admission into engineering undergraduate degrees have been stable for several years and reflect nearly two-thirds (63.1 per cent in 2019) of commencing students were admitted to engineering bachelor degrees on the basis of their secondary school completion. The proportion admitted based on a VET qualification (probably gained from the TAFE sector) was 6.3 per cent in 2019. The proportion entering based on a HE qualification (such as an associate degree or Enabling Diploma) or as a transfer from another institution has stabilised to about 21 per cent⁷⁰. The final column in the Table below shows relatively more women enter on the basis of completing secondary school, and relatively fewer have a VET qualification. Given the low participation of women in VET engineering qualifications this may imply a quite high proportion of those who do complete VET choose to progress to Higher Education⁷¹. The VET to higher education pathway, it might be argued, may be a small but emerging alternative pathway to increase female participation in engineering higher education.

basis of admission	domestic commencing Engineering students				
	2016	2017	2018	2019 (All)	2019 (Women)
completed secondary school	57.9%	61.6%	63.4%	63.1%	68.5%
VET/TAFE	7.3%	6.1%	6.1%	6.3%	4.2%
higher education	23.1%	21.7%	21.0%	21.0%	19.7%
other	11.7%	10.2%	9.4%	10.0%	7.7%

⁶⁹ Lynette Vernon: [Dismiss median ATAR as indicator of school performance and increase course participation](#) The West Australian Fri, 3 March 2023

⁷⁰ Australian Council of Engineering Deans [Australian Engineering Higher Education Statistics 2009 - 2019](#)

⁷¹ Australian Council of Engineering Deans [Australian Engineering Higher Education Statistics 2009 - 2019](#)

The engineering skills shortage is ever growing, with continued demand outstripping supply. The enrolments across engineering have not significantly increased year on year from 2018-2021.

Award Course Completion for all students by Citizenship and Broad Field of Education, 2011 – 2021 Engineering and Related Technologies

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Domestic Students	9,424	9,896	10,461	11,074	11,545	11,501	11,403	11,915	11,277	10,946	11,422
Overseas Students	7,405	7,016	7,825	8,476	8,544	9,894	11,360	13,445	14,593	14,407	14,416
All Students	16,829	16,912	18,286	19,550	20,089	21,395	22,763	25,360	25,870	25,353	25,840

Award Course Completions for All Students in WA Higher Education – Engineering and related technologies⁷²

Western Australia	Total 2020	Total 2021
Curtin University	1053	1144
Edith Cowan University	450	482
Murdoch University	114	104
The University of Notre Dame Australia	0	0
The University of Western Australia	532	428
Non-University Higher Education Institutions	397	322

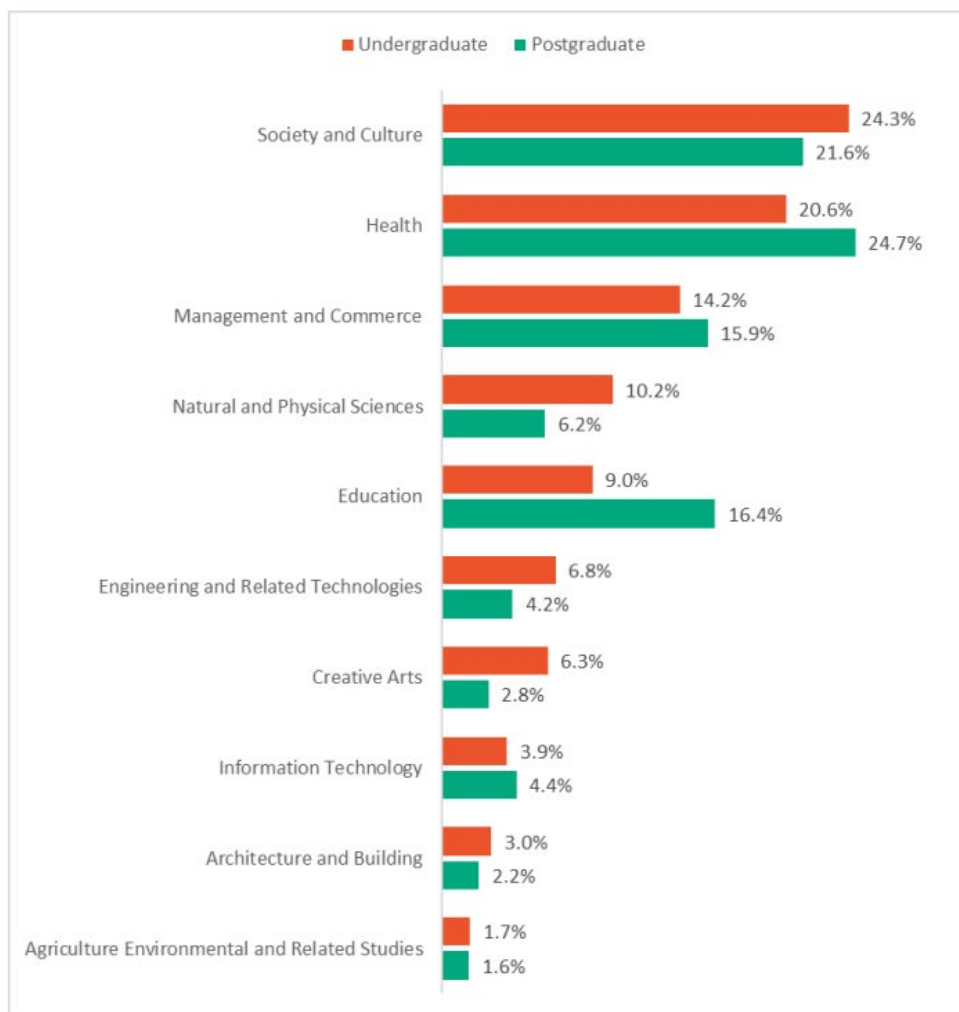
Undergraduate disciplines that have experienced the largest percentage increase in enrolments between 2008 and 2020 were Information Technology (a growth of 86.1 per cent), Health (84 per cent) and Natural and Physical Sciences (75.5 per cent). Management and Commerce experienced the slowest growth in enrolment over the period (6.9 per cent)⁷³.

Share of domestic undergraduate and postgraduate enrolment, by broad field of education 2020⁷⁴.

⁷² <https://www.education.gov.au/higher-education-statistics/resources/2020-section-14-award-course-completions>

⁷³ Australian Council of Engineering Deans [Australian Engineering Higher Education Statistics 2009 - 2019](#)

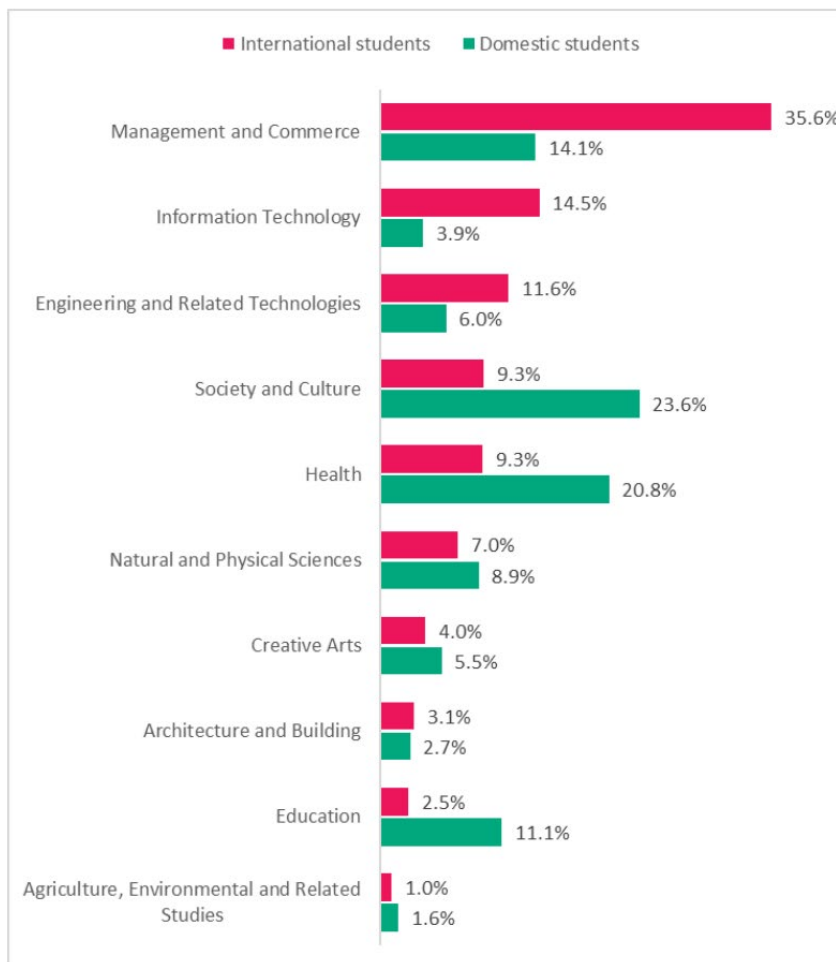
⁷⁴ Universities Australia [2022 Higher Education Facts and Figures](#) June 2022



Source: Department of Education, Skills and Employment, unpublished HEIMS UA dataset, various years.

Since 2008, international student enrolments have tripled in Architecture and Building (up 203.3 per cent), Information and Technology (150.4 per cent), Engineering and related technologies (146.5 per cent) and Agriculture, Environmental and Related Studies (106.7 per cent).

Share of students by broad field of education, domestic vs international students 2020⁷⁵



Source: Department of Education, Skills and Employment 2022, 2020 unpublished HEIMS UA dataset.

In 2020, a report by the Australian Council of Engineering Deans found the 2019 proportion of domestic women commencing any award program in engineering was the highest on record at 18.4 per cent, continuing the slowly increasing trend⁷⁶.

⁷⁵ Universities Australia [2022 Higher Education Facts and Figures](#) June 2022

⁷⁶ Australian Council of Engineering Deans [Australian Engineering Higher Education Statistics 2009 - 2019](#)

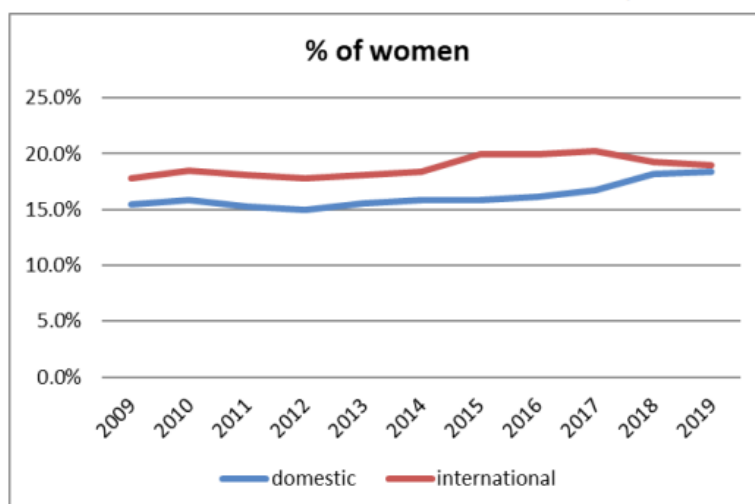


Figure 5 Proportions of women in the domestic and international commencing student cohorts, 2009-2019

The proportion of women in the domestic commencing bachelor degree has increased each year, from 13.7 per cent to 18.6 per cent over 2012 to 2019. The 2019 figure is the highest on record. A higher proportion of women than men (68.5 per cent vs. 61.9 per cent overall) enter on the basis of their secondary school completion⁷⁷.

major branch of engineering	domestic (% women)	international (% women)
aerospace (inc. civil aviation degrees)	15%	32%
civil engineering	17%	18%
electrical & electronics	11%	16%
mechanical & manufacturing	11%	10%
process & resources (chemical & mining)	31%	40%
All Undergraduate)	16.0%	21.6%

Women have strong(er) rates of participation in chemical engineering and civil engineering than in mechanical and the electrical engineering group. Areas that are also known to have strong participation by women, such as biomedical engineering and environmental engineering, are not explicitly included in this table⁷⁸.

Feedback from stakeholders in the resources sector is that they would like to increase the diversity of candidates in engineering (and other professions). There is an acceptance of the reasons a more gender diverse workforce is beneficial, which goes beyond equity and equal opportunity, and includes enhanced productivity and innovation that diversity brings – including gender, culture, socio-economic background.

On the 10th of March 2023, the Chamber of Minerals and Energy released the *Diversity & Inclusion in the West Australian Resources Sector Report*. The Report highlights the importance of workplace diversity and states:

“Workplace diversity and inclusion drives creativity, psychosocial safety, strategic resilience, and innovative solutions. Diversity presents the opportunity for companies and organisations to leverage strengths through

⁷⁷ Australian Council of Engineering Deans [Australian Engineering Higher Education Statistics 2009 - 2019](#)

⁷⁸ Australian Council of Engineering Deans [Australian Engineering Higher Education Statistics 2009 - 2019](#)

*the differences that exist between people working within an organisation. Increased diversity enhances critical thinking, problem solving and has been shown to increase the attractiveness of companies and organisations to potential business partners, employees, and society as a whole.*⁷⁹

A recent report from Engineers Australia on Women in Engineering states that the low rate of female entry into engineering degrees stems from a simple fact: most girls do not even consider engineering as an option. Engineers Australia commissioned this research in late 2021 to obtain insight into what factors are most influential when it comes to causing female engineers to choose engineering, and what factors caused those who didn't choose engineering, to not choose it⁸⁰. The report outlines that:

- Most girls do not even think of engineering as a career option, with only 7 per cent of surveyed women in non-engineering fields state they had seriously considered engineering. This is driven by a lack of familiarity: there is little understanding of what engineers do, or of the breadth of the engineering profession and the career opportunities it offers.
- Engineering lacks positive perceptions: it is mainly seen as male-dominated and challenging.
- Many girls are not supported to do well in STEM subjects in primary and high school, which reduces their likelihood of pursuing the prerequisite subjects for engineering degrees. There also exists a damaging perception that one needs to be exceptional in STEM subjects, particularly maths and science, to meet the demands of engineering study.

The report recommends there should be longer-term initiatives that address the systemic issues and “short and sharp” initiatives such as school career talks with representation from women in industry to influence career choice that are targeted early - from junior high school (and even earlier)⁸¹.

Engineers Australia research has shown there is a significant cohort of migrant engineers already in Australia who have long-term difficulties securing employment appropriate to their experience. A recent report outlines there is an existing pool of overseas-born engineers who currently live within Australia and these engineers make up over 58 per cent of Australia's engineering workforce but are significantly more likely than their Australian-born counterparts to be unemployed. Additionally, overseas-born female engineers have almost three times the unemployment rate of Australian-born female engineers, in a profession already challenged with low female participation⁸².

Across Higher Education there is reported to be a decreasing pipeline of graduates in geology, geophysics, metallurgy – all professions which are key to the future of the resources sector. These professions are in critical shortage currently in WA and growing a pipeline of new entrants is essential.

The challenge ahead for the future pipeline for resources sector is to attract a younger generation to work in the sector. Stakeholders, report an overall reduction in graduate applications. This was being particularly felt by the oil and gas sector.

In a recent report on Attracting the Next Generation: Turning Sceptics into Changemakers the report outlines that *‘Gen Z are highly motivated by purpose. As well as seeking secure, well-paying jobs they want to know the work they do has a positive impact on society and the environment. When students in our survey were asked how important it is that their chosen career positively impacts climate change, 30 per cent say it is highly important (a rating of 9 or 10 out of 10) and a further 29 per cent believe it is an important consideration (a rating of 7 or 8 out of 10). Gen Z are highly attracted to organisations that appear to care about the environment and their impact on society. In many cases these perceptions are shaped by media portrayals and online marketing campaigns*⁸³.

⁷⁹ Chamber of Minerals and Energy [Diversity and Inclusion in the Western Australian Resources Sector](#) 6th Edition

⁸⁰ Engineers Australia [Women in Engineering](#) June 2022

⁸¹ Engineers Australia [Women in Engineering](#) June 2022

⁸² Engineers Australia [Barriers to Employment for Migrant Engineers](#); Research Report October 2021

⁸³ BDO [Attracting the Next Generation: Turning Sceptics into Changemakers](#) March 2022

A concern about the environmental credentials of the resources sector is reported as a blocker for a younger generation when considering a career in the industry. It is reported this sentiment varies between regional and metropolitan areas. Resources companies need to communicate better and more frequently on the specific actions they are taking to generate positive environmental and social impact. They need to work harder to dispel misconceptions that these industries have no place in a future green economy, and to counter the negative impression that pervades the way students think about resources industry today.

Regional Issues

Stakeholders in the regions frequently refer to the importance of regional liability as one of the key enablers and barriers to workforce participation within WA remote and regional areas. Crucial to attraction and retention of a regional workforce in WA is the availability and affordability of housing and early childcare education and care (ECEC), alongside the accessibility and quality of education and quality and timely health care services. Access to infrastructure, sporting, recreational, arts and cultural hubs, and hospitality venues in addition to crime and security in the local regions are key decision-making considerations for individuals and families considering relocation to the regions.

Stakeholders in regional WA have also raised the issue of availability of quality training services within the regions to ensure the skills development of local workforces. From a community perspective, this is particularly relevant when supporting diverse talent pipelines, such as First Nations, women, and people with disability, who may face barriers commuting to metropolitan areas to complete their studies. To supply the skills required for the future of the resources industry, a continued investment in local skills and training is needed.

Stakeholders in the regions report skills shortages to be of significant concern which is impacting companies' production volumes, productivity, and development timelines.

Other high-level themes that emerge from all regions in WA are:

- Faster, more efficient migration opportunities would increase availability to larger skills pools.
- The challenges of safely managing new to industry and concerns over the potential safety impacts.
- Concerns over inflationary pressures on their business and supply chain disturbances.
- The risk and opportunities posed by the transitioning to renewables.

A significant issue that has been raised by Stakeholders is the time taken for Environmental approvals and the inability to get approvals in a timely fashion. Environmental Approvals remain a barrier to industry. EPA Part 4 approvals are increasingly very difficult to navigate, and approval times are reported to be lengthy.

Kimberley

Stakeholders in the Kimberley Region report skills and labour shortages are affecting the region and difficulties in recruiting staff due to remote location. The Kimberley unemployment rate has been consistently higher than the State unemployment rates⁸⁴. There has been reported a high level of youth disengagement and dependence on work readiness programs. Several foundation skills courses are run by the campuses in the region to address these issues, and many students enrol through employment agencies which the TAFE engages with.

Like many regional areas in WA, the Kimberley is struggling with adequate ECEC provisions and a lack of ECEC workers. There is a shortage of affordable and available housing and accommodation which is a significant issue for residents, employees, employers, and businesses.

The January Kimberley flooding caused freight costs to rise. Many contractors are being utilised in the Fitzroy rebuild, leading to less services available on the ground to respond to maintenance requests in other

⁸⁴ <https://www.kdc.wa.gov.au/our-region/live-in-the-kimberley/employment/>

parts of the Kimberley region. Food and goods supply chain is slow due to flooding, road access and damage.

Pilbara

Regional liability issues are a reoccurring theme for stakeholders in the Pilbara and include availability of local and affordable housing solutions, availability of ECEC, availability of healthcare, issues with crime (particularly in Port Headland and Newman). Lack of local training capabilities for certain trade outcomes, issues with training administration and concerns being raised over training for future Hydrogen and the energy transition workforce have been raised by stakeholders. Like other regions skills shortages are negatively impacting the region.

Goldfields

Regional liability issues are also a concern in the Goldfields with ECEC a critical issue and housing availability at critical levels including short term accommodation requirements for shutdowns, temporary construction and project phases. Like other regions, skills shortages are negatively impacting the region and the increased prices of consumables.

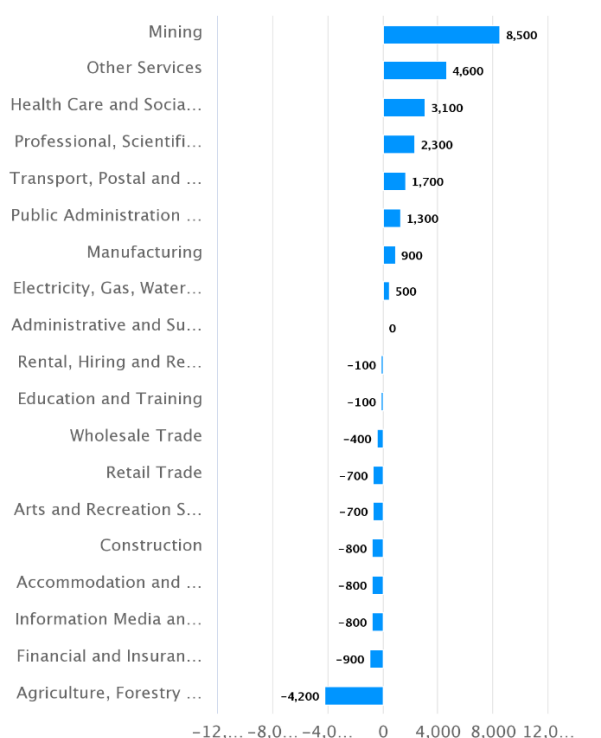
Southwest

Resources companies in the Southwest report an ongoing concern with a tight labour market and ability to recruit and relocate employees to the region due to the lack of accommodation options in the region. Concerns over retention of staff is another issue that is frequently raised as is an aging workforce and succession planning.

Stakeholders all report issues with government approvals processing times. Energy supply security and certainty is of particular concern for the Southwest region.

Recent data shows that mining has grown significantly as an employer in the Southwest over the past 5 years⁸⁵.

Employment Growth by Industry - 5 Years to February 2023, South West WA



⁸⁵ <https://labourmarketinsights.gov.au/regions/employment-regions/?region=South+West+WA>

Workforce Issues

In 2021 - 22, stakeholder feedback in the Resource Sector centred around workforce issues with the sentiment in recruitment, many companies had the sense that they are all 'fishing from the same pool' and that 'poaching' is the normative behaviour with employers using a variety of incentives to attract staff. Turnover and retention issues were expressed as a major challenge across 2022.

Into 2023, stakeholders report turnover continues to be a challenge but appears to have stabilised more recently. The feedback was about creating the right kind of culture, incentives, and flexibility to attract and retain employees. Retention is still an area of focus, particularly in specific job families like geology, engineering and drilling where attraction and retention strategies are a high priority.

For professional occupations like geology and engineering stakeholders report:

'Recruiting engineers and other white-collar professionals within WA we are just attracting candidates from other companies. No one is looking for work or out of work. We are using every attraction initiative – attraction bonuses to sign on, retention bonus to stay, 12-month bonuses for longer term retention – and trying to avoid salary inflation. The type of candidate we are attracting is different. Advising clients don't look for a candidate that ticks 100 per cent of the boxes. You must train and mentor 30 per cent of the skills now to get a candidate for a position.... Demand is comparable but not quite at the previous boom, but supply is much more constrained and there is no steady flow of candidates.'

For trade occupations that were experiencing a chronic skills shortage even prior to the Covid-19 period, many stakeholders now report having to utilise migration pathways to fill vacancies.

Entry level occupations that were constrained in early 2022 have led to shortages further up the career pipeline. An example of this is where the drilling industry was experiencing a chronic shortage of candidates for the driller offsider roles in 2021-22, they are now experiencing a shortage of drillers. If an early career pathway is not built, there is an impact later in the mid-career pathway for an industry. This has also been further exacerbated by a lack of mobility of experienced drillers relocating to WA from other states for work.

For companies with very established operational workforce, retirement planning remains an issue and companies have reported some employees who were expected to retire choose to stay on because of Covid and some made the choice to retire early.

Stakeholders report losing experienced people and having to replace with much less experienced people. This can mean a loss of deep corporate knowledge, industry foresight and a transference of skills that are very difficult to replace.

Stakeholders report having to recruit less experienced people than they would have traditionally considered for positions and supporting them with mentoring and on-the-job training to gain the exposure and experience they require.

Stakeholders are reporting the use of higher salaries, packages, and other benefits as the lever to attract scarce talent. This is driving unrealistic expectations in the market and may lead to wage inflation and in the longer-term, unsustainable rates of pay. Supporting and incentivising employees to live and work locally continues to be a priority for the industry.

Stakeholders report wanting to support STEM in schools and digital technology initiatives as well as support better career information about jobs in the sector, and connections with schools to build the latent pipeline for the future.

To attract employees, companies are also reporting the following strategies:

- Financial incentives for relocation costs;
- Employer provided housing;
- Financial incentives for employee sourced housing (e.g., rent and mortgage assistance);

- Financial packages with living assistance (e.g., childcare, health insurance, fuel, utilities, discounted goods etc.);
- Financial assistance for occasional personal travel (e.g., return to state of origin);
- Free or discounted shares and bonds;
- Career development opportunities;
- Assistance with spouse work placements;
- Access to quality services and amenities;
- Offering choice of where to live (regional/metro);
- Exploring roster and flight options which connect regional labour supplies with operations;
- Flexible working hours to support participation in family and community activities;
- Flexibility to work from home, where possible;
- FIFO type rosters in Perth metro;
- Increases superannuation;
- Private Healthcare; and
- A range of bonus schemes including referral bonuses, and retention bonuses.

With an increasingly diverse labour market, employers are now faced with a workforce that expects more flexible working options, purpose-driven workplaces and corporate cultures that champion a culture of lifelong learning.

Stakeholders report many applicants are seeking flexible working arrangements including working from home where this can be accommodated in their job role. For more operational and site-based roles, this is not a viable option.

Many stakeholders report reviewing their FIFO roster arrangements and administering different patterns to provide flexible options. For example, changing from a 2:1 pattern to 8:6 pattern offers a better work/ life balance. However, this means increasing operational costs as it increases the volume of flights, cleaning requirements on site, and back-to-back working arrangements.

Employers are having to advertise more broadly across several platforms and to be creative in their recruitment marketing activities. Seek is still used as a recruitment tool and many stakeholders are reporting receiving higher levels of applicants than they were at the beginning of 2022.

Many stakeholders report having to use the service of multiple recruitment agencies to assist them with their hiring and recruitment activity.

Increased remuneration and cost of hiring and entitlements for employees as well as escalating supply chain costs means business are reporting a concern over forward cash reserves – unable to bank cash now for future lean time. Businesses are also reporting having to tender on less work as they do not have the staff to support the workload.

Across the board, there has been an issue reported with retention of recruitment staff and with the level of remuneration that is now being offered to secure recruitment staff.

Stakeholders also report that attraction and retention of trainers, both in State providers, Private RTOs and site-based trainers has been an issue. For site-based trainers, they often have a secondary role and may be too busy with production which can create a training bottle neck. Some stakeholders have reported a preference for industry trainers to have the TAE Assessor Skills Set rather than full Cert IV TAE which would help with the number of available trainers on site.

What training strategies has industry used, or may consider using in the future to respond to these trends and/or developments?

Companies reported a combination of strategies to train their workforce to address the skills and labour shortages:

- Developing educational pathways to support, develop and grow existing Australian talent including putting on trainees and apprentices in record numbers.
- Working with TAFE and universities to develop the skillsets for the longer term
- Exploring adjacent industries for opportunities to build transition pathways into the mining sector.
- Bringing back to the workforce retired trades people 2-3 days a week
- Upskilling existing workers into Apprenticeships
- Dual apprenticeships
- Working with non-traditional cohort such as older women for trades and traineeships, younger women, and improved pathways for indigenous people
- Work experience/ placements for Cert II out of TAFE and VET in School
- Investigation of skilled migration pathways, however, the time frames and cost means for many businesses this is cost prohibitive.
- Contacting prisons to work with prisoners released on parole.
- Investigating working with Jobactive providers

Some suggestions to enable the resources sector to train local and skill their workforce are:

- To have a flexible and nimble training system to enable dual trade in efficient time frames and multi skilling, and post-trade skill sets, particularly to support technological innovations, decarbonisation, and electrification of the sector.
- To ensure qualification delivery is industry facing, occupationally and job outcome focused.
- More dynamic and less paper based RPL system that is based upon industry standards – including expansion of the Skills Recognition Apprenticeship Program to include trades in the Resources Sector and not just construction trades.
- Working with universities to embed data analytics into degrees.

Additionally, it is crucial for the training system to:

- Understand current cohort of learners and adapt the delivery of learning and assessment to incorporate digitally enabled learning. With the difficulty for training providers to attract and retain lecturing staff to be able to provide a training service, an adoption of different modes of delivery must be made a priority, particularly for access to training in remote and regional areas. As more rare earth and critical minerals companies are establishing, and in more regional and remote areas, a different method delivering learning and assessment solutions must be investigated.
- Industry and training partnership – provide funding for industry to upskill experienced workers to have a TAE Skills sets/ Full Cert IV TAE to work in partnership with training providers to be able to provide on the job training and assessment in collaboration with institutional learning services. This will enable training to be undertaken in remote and regional areas and where there are thin markets.
- Funding for learning and assessment materials to be developed for emerging areas and for sectors where there are reported difficulties with service delivery such as the composites sector and poly welding.
- Encouraging aging workforce or retired workforce to reskills as trainers and mentors to industry.

Industry and School links

Across the resources industry there is a genuine interest in establishing connections with local school to promote careers into the resources sector and build early pipelines into trades and professions. Industry currently does this in an ad hoc way and through the merging Year 9 Taster Program and Professional Development for School Career Advisers may be a more strategic way of creating awareness of the sector and career pathways. For example:

- Roy Hill have developed a high school engagement strategy.
- Yarra have employees teaching science classes at local Karratha high schools and
- other companies have Senior Professionals return to their high schools to give talks about their careers and time in industry.
- Kwinana Industry Council imen and iwomen program run a very successful school and industry linkage program for 26 high schools to connect with industries in Kwinana and Fremantle.

VET in Schools

School-based Traineeship programs of relevance to the resources sector are seen as a successful pathway towards an apprenticeship and career in the resources sector and need to be developed further. Program delivery is dependent on the partnership between the school, training provider and employer.

Mentoring resources

Industry collectively reports a toolkit of mentoring resources which support their workforce to better understand, effectively communicate with, and train school-based learners is required. Companies heavily invested in this space have been developing their own resources, however demand remains for a mentoring toolkit for supervisors of school-based learners in heavy industries.

Try a Trade

Try a Trade program offers a taster for students at Year 10 to explore the world of work and enables students to choose a VET in school pathway for Year 11 and 12. The decision to expand Try a Trade by CTF to engineering trades such as mechanical fitter, boiler maker and welder is seen as an important step in creating awareness about these roles and career pathways into the resources sector. The barrier for implementation has been that training providers are at capacity with the delivery of apprenticeship programs, so the uptake has been limited so far.

Adult apprenticeships

Increasingly stakeholders report either having taken on or wanting to take on adult apprentices. Candidates who are over 21 years old tend to have higher completion rate than younger cohorts. For contracting companies who have a less certain pipeline of work, adult apprenticeship is seen as an attractive solution. Stakeholders report the major barrier for adopting adult apprenticeships is the time it takes to have an employee assessed through the RPL process which remains largely paper based and can often take over six months to complete. The time frame of an adult apprenticeship (compared to a qualification expressed nominal hours) and the funding model for TAFE also exists as a barrier.

Stakeholders utilise trade upgrades to fill labour shortages such as light vehicle to heavy diesel upgrades and run trade upgrade and gap programs for ex-defence personnel.

Unfortunately, RPL processes have become overly concerned with compliance and prescribed inputs and have lost sight of competency as evidence of knowledge and task-based approaches relating to experience. A more flexible and agile way of recognising experience and previous learning needs is to be found to upskill existing workers, provide opportunity and access and to utilise current skills towards a streamlined training pathway in a time of labour and skills shortage. Access must exist for new to industry apprenticeships as well as for existing employees to be able to utilise efficient trade training that recognises current skills and knowledge to provide the much-needed skilled labour pool using local WA talent.

Upskilling existing workers into skills shortage rolls

Larger business with capacity has started to strategically look at how to upskill workers into critical in need roles. For example, how to utilise post graduate training pathways to upskill environmental scientists to hydrogeologists, how to upskill drillers to geologists, process plant operators into metallurgist roles (met tech), chemical engineers to metallurgist, upskilling into maintenance planning roles. These upskilling pathways and cross skilling pathways to meet in demand and critical roles are essential and should be explored further. Funding needs to be attached to existing employees to provide assistance to upskill local talent.