MINERALS COUNCIL OF AUSTRALIA

EMPLOYMENT WHITE PAPER CONSULTATION

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1. EXECUTIVE SUMMARY

The mining industry is firmly embedded in Australia's future. It is a global leader in providing the essential elements of modern life while growing the nation's economy and sustaining regional communities.

Mining is the largest contributor to the Australian economy accounting for 10 per cent of gross domestic product (GDP), the largest source of export income, and supports over 1.1 million jobs at over 200 operating mine sites and in supply chains across the country.

The industry is already providing highly paid, highly skilled and secure jobs, with annual wages almost 52 per cent higher than the all industries average ($144,000 compared to $95,000), 96 per cent of workers being full time and 88 per cent being permanent employees.

Mining employment has tripled in the past twenty years. Since 2011, the direct workforce has expanded with 54,000 new jobs. This growth is projected to continue, with an additional 16,000 jobs to be added over the five years to November 2026.

These jobs are increasingly require leading edge technical skills: advanced engineering and mathematics, digital, artificial intelligence, robotics and communications. This is on top of significant traditional employment in engineering, trades, chemistry and environmental science.

The modern mining workforce is not separate or unique: it is built on the best most modern skills – skills that flow across the entire economy, becoming an enabler of technological advance, higher wages and greater national prosperity.

This prospect of further mining growth, particularly from the large increase in demand for the minerals and metals essential for the transition to a net zero economy by 2050, as well as ongoing demand for traditional commodities, presents a unique opportunity for Australia to have a bigger, future-focussed and inclusive workforce.

Over the last decade, the significant contribution to Australia's economy (from large investment in exploration, mining projects and sustaining capital) ensured Australia had the mine production capacity, supporting infrastructure, services and skilled workers to meet growing global demand for commodities. A demand that will continue to grow as economies develop, grow and decarbonise.

In order for industry to meet this demand, continued investment for growth, access to and adoption of new and transformative technologies, and growth in the talent pipeline are essential.

The Australian mining industry is rapidly undergoing a digital transformation that is enhancing existing and creating new occupations – making mining safer, more productive and more sustainable. Maximising the benefits of digital transformation requires access to a skilled workforce and supportive innovation ecosystem.

Addressing skills and labour shortages is a global challenge. As the nation navigates the economic recovery of the COVID-19 pandemic and impacts of low productivity growth, an accessible, responsive and functional skills and training system is critical. Improving sector integrity and stability is an important foundation for improving participation, stimulating the talent pipeline and increasing labour market outcomes.

For more than twenty years, the mining industry (through the MCAs Minerals Tertiary Education Council) has been building provider capacity in core minerals related disciplines, and enhancing collaborative partnerships across the tertiary education landscape. Industry collaboration and contribution delivered modernised curriculum, (bachelor and associate degrees in engineering), innovative courses and new learning pathways (foundational skillsets and micro-credentials).

For mining, skilled migration is a small but vital source of specific talent. It is imperative the skilled migration system is easy to navigate, fit-for-purpose, and efficient. In the current skills and labour crisis, weaknesses in the skilled migration system need to be addressed to improve business confidence, and maintain Australia's profile as an attractive destination for global talent.

A growing mining workforce must be a diverse and inclusive one. The minerals industry is taking a coordinated approach to building a more inclusive workforce, with internal policy calibrated to respect for women, achieving gender equality and increasing choice and flexibility for women. There is also an urgent and determined focus on eliminating sexual harassment and addressing barriers to participation.

With a workforce spanning the mining lifecycle and value chain, the skills and employment landscape of the Australian mining industry is complex. In preparing this submission, the Minerals Council of Australia consulted with members through the Workforce and Innovation Committee, capturing a cross-section of this diversity.

This submission seeks to provide an overview of industry progress, action and priorities related to skills and employment in the context of key themes presented in the White Paper Consultation Terms of Reference (White Paper terms of reference), including:

- Future of work and implications of structural change
- Labour force participation
- Pay equity and equal opportunities for women.

Throughout the submission, 21 recommendations (Section 2: Recommendations) cover frameworks, policy settings and mechanisms the MCA propose be considered, and prioritised in the White Paper terms of reference.

A roadmap for Australia to build a bigger, better-trained and more productive workforce – to boost incomes and living standards and create more opportunities for more Australians, will depend on government:

- Adopting the MCA's seven recommendations to the Productivity Commission to lift productivity growth and investment and improve competitiveness in the Australian mining industry (Appendix 1.1)
- Modernising Australia's skills system by building collaborative and accessible pathways (including skills essential for the digital transformation), making labour market data relevant to workforce planning, and supporting STEM initiatives
- Positioning migration as a complement to the domestic workforce and response mechanism to the skills crisis, by expanding skilled migration pathways to lower skilled roles that would not ordinarily be accommodated
- Supporting business initiatives to build diversity into their workforce planning with accelerated apprenticeships, micro-credentials and tailored programs that target underrepresented groups such as women, people with disability and Aboriginal and Torres Strait Islander people
- Expanding workforce participation and diversity through swift implementation of commitments that support women's safety, equity, opportunity and economic participation (including childcare, parental leave, and the Respect@Work recommendations)
- Addressing regional liveability challenges impacting workforce attraction and retention, such as housing affordability and access to skills and training in regional areas
- Developing common principles with states and territories to ensure an orderly net zero transition that does not undermine business confidence or disrupt energy reliability and security.

2. RECOMMENDATIONS

The MCA recommends frameworks, policy settings and mechanisms that:

Improve productivity

1. Lift productivity growth and improve the Australian minerals industry's international competitiveness and contribution to the economy.

Enable the transition to net-zero emissions

2. Common principles for an orderly transition to the net zero economy
3. Technology-neutral approach to drive new high paying, high skilled jobs in emerging H_2 and NH_3 economy
4. Public support for Australian mining as a key enabling industry for new skills development and productive jobs stemming from the energy transition globally.

Maximise benefits of transformation associated with digitalisation and emerging technologies

5. Formalised identification of new skills in digital transformation for existing workforces
6. Recognition of new and emerging occupations by the Australian Bureau of Statistics
7. Program, policy and regulatory settings to strengthen the mining innovation ecosystem
8. Support for initiatives to inspire the aspiration of the next generation of science, technology, engineering and mathematics (STEM) professionals
9. Collaboration with State and Territory government's on initiatives to boost STEM teacher quality.

Support skills and training

10. Engagement with the mining industry as a priority for the workforce planning activity of Jobs and Skills Australia
11. A mix of modern, accessible skills pathways, developed in collaboration with industry – including accelerated apprenticeships, micro-credentials and bridging/stackable, short-burst courses
12. Develop and grow a quality skills and training workforce and supporting infrastructure.

Increase enablers and reduce barriers to participation and improved labour market outcomes

13. Cross-portfolio collaboration and place-based responses to address regional liveability challenges impacting workforce attraction and retention
14. Tailored approaches to achieve Traditional Owner aspirations for jobs, skills and business opportunities for young people, to work on country and in their communities
15. Tailored industry employment and training programs that target underrepresented groups, including women, people with disability and Aboriginal and Torres Strait Islander people
16. Innovative policy settings and initiatives to increase the talent pipeline and address skills shortages.

Position migration as a complement to the domestic workforce

17. Ensure the Australian Skilled Migration System remains internationally competitive
18. Improve business confidence in the system through better design and processes
19. Expand skilled migration pathways to lower skilled roles not ordinarily be accommodated as a response to the skills crisis.

Promote and support participation of women in the workforce

20. Priority implementation of the recommendations from the Respect@Work: Sexual Harassment National Inquiry (2020) Report, and Workplace Gender Equality Act (2012) Review Report
21. Swift implementation of commitments that support women's safety, equity, opportunity and economic participation, including parental leave and childcare.

3. CONTRIBUTION OF THE AUSTRALIAN MINING INDUSTRY

- Australia is the world's largest exporter of minerals and metals, and the largest contributor to the Australian economy.
- Mining supports over 1.1 million jobs at over 200 operating mine sites and in supply chains across the country.
- Enabling policies that improve productivity and competitiveness are integral to Australia retaining its comparative advantage.

Australian mining is a nation builder and global leader. It is Australia's largest exporter and industry, the largest company taxpayer, and the largest investor in infrastructure and equipment. It is also the world's largest exporter of minerals and metals, making it an essential part of global supply chains.

Australian mining is a world leader in the exploration, geoscience, processing technologies and environmental management systems needed to sustainably meet the world's growing demand for mineral and energy commodities.

Over the past two decades, the Australian minerals industry has underpinned the nation's prosperity through its contribution to exports, jobs, incomes and government revenue, and has been central to the sustainability of regions and communities. Over a range of economic measures, the decadal contribution to the economy is stellar – $2.2 trillion in resources export revenue and $249 billion in mining wages, representing 21 per cent of Australia's GDP growth.[1]

The industry can also be relied on to generate large fiscal returns to the economy, having contributed $132 billion in company taxes and $106 billion in royalties over the last decade from significant capital investments in regional and remote Australia.[2]

This investment ensured Australia had the mine production capacity, supporting infrastructure, services and skilled workers to enable the industry to meet growing global demand for commodities. A demand that will continue to grow as economies develop, grow and decarbonise. As new energy, transport and health care technologies emerge, there will be even greater opportunities for Australia to export a range of minerals and metals used in high-tech manufacturing.

The outlook for Australian mining is broadly positive, providing it remains competitive at both attracting investment and being able to diversify to other export markets as required.

Employment and wages

Mining employment has trebled over the past 20 years, from 87,800 in 2002-03 to 277,900 in 2021-22.[3] Around one in every ten Australian jobs is supported by the broader mining and mining equipment, technology and services (METS) sector.

Jobs in the mining industry are high skilled, highly paid and secure.

The industry pays the highest average wages: $144,000 a year, compared to $95,000 across all industries.[4] The vast majority of mining workers are full-time (96 per cent) and permanent (88 per cent).[5]

[1] Minerals Council of Australia, *Submission to Productivity Commission inquiry into Australia's productivity performance*, 29 March 2022, p. 5.
[2] ibid.
[3] Australian Bureau of Statistics, Labour Force, Australia, Detailed, August 2022, released 21 September 2022, table 6.
[4] Australian Bureau of Statistics, *Average Weekly Earnings, Australia*, May 2022, released 18 August 2022, table 10H.
[5] Australian Bureau of Statistics, *Average Weekly Earnings*, November 2021, released 24 February 2022, table 10h; *Labour Force, Australia, Detailed*, May 2022, released 23 June 2022, table 6; *Characteristics of Employment, Australia*, August 2021, released 14 December 2021, table 3.2.

Around 70 per cent of roles are located in regional areas, supporting the nation's economic resilience. More than 73 per cent of the mining workforce has a qualification, making it a highly skilled industry.[6]

Covering a range of scientific fields and professional occupations, the sector is the largest total employer of mining engineers (10.090), geologists and geophysicists (5,187), industrial, mechanical and production engineers (12,734), production managers (8,826), and metallurgists (567).[7]

Apprenticeships and traineeships are an important pathway into the minerals industry – with apprentices and trainees comprising approximately 4.5 per cent of the industry's workforce.[8]

Following a commitment to create 5000 new apprenticeships as part of the COVID-19 economic recovery effort, more than 11,000 apprenticeships and traineeships were created between the December 2020 and March 2022 reporting period.[9] During the same period, an average 10 per cent of apprentices and trainees were Aboriginal and Torres Strait Islander, and an average 20 per cent were women.[10]

Since 2011, 54,000 jobs have been added to the workforce. Projections by the National Skills Commission indicate the industry's strong workforce growth will continue, with an additional 16,000 jobs to be added over the five years to November 2026.[11]

Productivity

Over the long-term, productivity growth is the main driver of rising living standards. In a submission to the Productivity Commission's inquiry into Australia's productivity performance, the MCA highlighted strong economic growth driven by improved productivity performance delivers more investment, jobs, higher real wages and higher incomes (see Appendix 1.1).[12] Critically, the Productivity Commission submission cautioned the minerals industry's contribution to the Australian economy, regions and communities cannot be taken for granted, given the:

- Competitive nature of global markets and competition among countries as sources of supply
- Increasing dependence of mining's commercial success on efficiency of entire export supply chain – from research, exploration, mine or product development, through to final shipment.[13]

To combat this, Australia needs to be positioned for the next wave of mining investment through internationally competitive and stable investment settings.[14]

Key considerations for the white paper

Given the current skills and labour shortages, coupled with the projected growth in global demand for commodities, the frameworks, policy settings and mechanisms established will play a pivotal role in positioning Australia to meet growing global demand for commodities to power economic growth, economic development and decarbonisation. In this context, the MCA recommends the White Paper terms of reference consider and prioritise:

- MCA's seven recommendations to the Productivity Commission to lift productivity growth and investment and improve competitiveness in the Australian mining industry (Appendix 1.1)[15]

[6] National Skills Commission, *Australian Jobs Report*, 2021 Edition, viewed 18 November 2021.
[7] Australian Government, *Labour Market Insights*, 10 September 2021, MCA calculations, viewed 2 December 2022. NB these figures are estimates of the total number of workers directly and indirectly employed by the resources sector.
[8] National Centre for Vocational Education Research, *Apprentices and trainees 2022: March quarter*, NCVER DataBuilder, 12 October 2022, MCA analysis, viewed 21 October 2021.
[9] ibid.
[10] op. cit. National Centre for Vocational Education Research, 21 October 2021.
[11] National Skills Commission, *Employment Outlook – Industry and occupation trends for the five years to November 2026*, Australian Government, 2021, p. 7; and NSC, *Labour Market Insights: Mining*, Online portal, viewed 11 October 2022.
[12] op. cit. Minerals Council of Australia, March 2022.
[13] op. cit. Minerals Council of Australia, March 2022, p. 6.
[14] op. cit. Minerals Council of Australia, March 2022, p. 6.
[15] op. cit. Minerals Council of Australia, March 2022, p. 6

4. FUTURE OF WORK AND IMPLICATIONS OF STRUCTURAL CHANGES

- Australian mining and its workforce will be critical to the global clean energy transition – both in terms of reducing emissions and the materials the industry provides.
- The Australian mining industry is rapidly undergoing a digital transformation that is enhancing existing and creating new occupations – success relies on access to a skilled workforce and moving technology through the technology readiness levels.

The energy transition and tackling climate change to achieve net zero

The Australia minerals industry has a significant, multi-faceted role to play in the energy transition and tackling climate change to achieve net zero. As a large producer and consumer of energy, reducing emissions, and working towards making operations net zero by 2050 is a significant part of this role.

Having launched the Climate Action Plan in June 2020, with its industry ambition of net zero by 2050, the mining industry is taking practical climate action, including the rollout of renewables, carbon capture and storage development, methane capture and conversion, electric and autonomous vehicles investments, battery storage and hydrogen trials and exploration efficiencies.[16] Reliable, competitive, low emissions electricity is also a key pathway to decarbonise industrial processes including mining and minerals processing.

Box 1: Industry action

All of the MCAs member companies are committed to industry's ambition to achieve net zero emissions by 2050, some publically announcing net zero target dates – Anglo American (2040), BHP, Energy Australia, Glencore, Newcrest, Newmont, Rio Tinto, South 32 and St Barbara (2050).

Since launching the Climate Action Plan, the MCA and member companies have:

- Continued to invest in research to better understand the technologies and practices necessary to achieve decarbonisation across the sector[17]
- Agreed to adopt the globally recognised Towards Sustainable Mining (TSM) system – an independently verified system which includes protocols that members will use to evaluate, manage and communicate their sustainability performance[18]
- Progressed work on the themes, actions and activities contained in the action plan, as well as new initiatives such as collaborations with key equipment providers to develop zero emissions haulage, and increased deployment of renewables at mine sites – captured in the annual progress reports and on the MCA website.[19]

The global transition to low emissions technologies – including solar, wind, batteries, gas, advanced coal and nuclear energy – depends on the metals and raw materials provided by the minerals sector.[20] Electrification will drive increased demand for copper, nickel, cobalt, uranium for nuclear power and lithium needed for battery electric vehicles, neodymium for permanent magnets and steel for critical infrastructure.[21]

There is broad consensus that demand for metals essential to the clean energy transition will rise substantially in the long-term.[22]

[16] Minerals Council of Australia, *Climate Action Plan*, 22 June 2020.
[17] Minerals Council of Australia, *Mining towards net zero 2050*, 2021.
[18] Minerals Council of Australia, *Climate Action Plan – Progress Report Year 2*, September 2022, p. 5.
[19] Minerals Council of Australia, *Climate Action Plan – Progress Report Year 2*, September 2022; Minerals Council of Australia, *Climate Action Plan – Progress Report Year 1*, June 2021; and Minerals Council of Australia, *Member climate announcements*, web page, November 2022.
[20] Minerals Council of Australia, *Energy and climate change*, web page, 2021, viewed 22 November 2022.
[21] Minerals Council of Australia, *The Digital Mine: A review of Australia's mining innovation ecosystem*, September 2022, p. 12.
[22] Minerals Council of Australia, *Submission to Productivity Commission inquiry into Australia's productivity performance*, 29 March 2022, p. 10.

Leading analysts forecast demand for some raw materials, such as rare earth metals, could increase by a volume of ten times or more the current market size.[23] For example:

- Demand for electricity is projected to triple by 2050 as sectors electrify and hydrogen and hydrogen-based fuels become more available as the economy decarbonises[24]
- A fourfold increase in metals is required to generate the same megawatts from wind and solar energy generation as a coal or gas-fired power station.[25]

With significant resources of these minerals, Australia is well placed to meet this surging demand – to do this will require the mining industry to explore for the metals, find, and develop the deposits that will enable the transition. Critical to this will be the industry's ability to:

- Attract new investment needed to increase output and meet this demand – the mining industry faces significant competition from emerging mining regions in Africa as well as traditional mining centres in South America and Canada to attract investors[26]
- Access the existing and emerging technologies needed to facilitate and maintain the energy transition – this includes
  - Transformative technologies such as carbon capture utilisation and storage in which Australia can build competitive advantages to underpin high paying jobs in the clean economy of the future
  - Critical technologies such as long duration energy storage, which enable surplus energy to be stored from wind, solar and other clean sources to be available when needed[27]
- Secure technical, specialist and operational workforce needed – this includes emerging occupations as well as those currently in national and global shortage.

In addition to the technical, specialist and operational skills, there will be increased demand for 'green skills' to support the energy transition and tackle climate change. These will be required at a specialist level and to upskill existing professions to ensure competency, application and advancement across:

- Safety and sustainability practices and sustainable development planning
- General environmental knowledge, awareness and understanding
- Regulatory skills related to compliance, licensing and modelling
- Research and adaptive management skills for environmental planning.

As demand for these skills will not be limited to the mining industry, additional pressure will be placed on both the training system, as well as the already tight skills and labour market.

Key considerations for the white paper

The frameworks, policy settings and mechanisms required to realise (and maintain) the energy transition and tackle climate change, need to support new and continued investment for growth, access to and adoption of new and transformative technologies, and growth in the talent pipeline.

To enable the transition to net-zero emissions, the MCA recommends the White Paper terms of reference consider and prioritise:

- Common principles for an orderly transition to the net zero economy (agreed by Government, states and territories)

[23] Minerals Council of Australia, September 2022, p. 12; and Marcelo Azevedo, Magdalena Baczynska, Patricia Bingoto, Greg Callaway, Ken Hoffman, and Oliver Ramsbotto, *The raw-materials challenge: How the metals and mining sector will be at the core of enabling the energy transition*, 10 January 2022, McKinsey and Company, viewed 22 November 2022.
[24] McKinsey and Company, *Global Energy Perspective: executive summary*, April 2022, p. 23.
[25] op. cit. Marcelo Azevedo et al, January 2022.
[26] op. cit. Minerals Council of Australia, 29 March 2022, p. 10.
[27] Long Duration Energy Storage Council and McKinsey & Company, *Net zero power: Long duration energy storage for a renewable grid*, LDES Council, November 2021, p. ii.

  - Including ensuring coal and gas plants do not leave the system before the new system is secure and ready

- Technology-neutral approach to drive new high paying, high skilled jobs in emerging H_2 and NH_3 economy
  - Focus on low carbon H_2 and NH_3 rather than just renewable H_2 and NH_3 – leverage long trading relationships with Japan to develop clean H_2 and NH_3 via gasified coal and gas with CCUS
- Public support for Australian mining as a key enabling industry for new skills development and productive jobs stemming from the energy transition globally
  - Positive curricula at all levels of education and training regarding the role of modern mining in the energy transition and tackling climate change to achieve net zero
  - Encouraging young people to consider careers in mining to grow the talent pipeline.

The transformation associated with digitalisation and emerging technologies

The Australian mining industry is rapidly undergoing a digital transformation that is enhancing existing and creating new occupations, as digitalisation and new and emerging technologies and innovations drive improvements across the mining lifecycle from exploration, development and operations to closure and rehabilitation, through to supply chains.[28]

Critically, this transformation is making mining safer, more productive and more sustainable.

Estimates from EY show adoption of digital and technological innovation has the potential to deliver significant productivity improvements (up to 23 per cent) to the mining industry by 2030.[29] EY also estimates that to transform the industry in this way would require investment of up to $35 billion.

With a significant national supply chain, Deloitte Access Economics estimates one in ten Australian jobs is linked in some way to the mining industry.[30] A key part of this supply chain is the mining, equipment, technology and services (METS) sector, delivering innovative drilling, extractive and processing technologies to improve performance across the industry.

The METS sector is important to unlocking future industry growth through the implementation of digital and emerging technologies needed to further boost productivity, enhance safety and advance sustainability.

The major hurdles for continuing and maximising the benefits of digital transformation are access to a skilled workforce (including the qualified trainers and educators to develop skills at all levels) and moving technology through the technology readiness levels, especially from concepts through to proven technology – which requires a supportive innovation ecosystem.

Workforce and skills

Science, technology, engineering and mathematics (STEM) skills are critically important to live and work in a globalised world, providing the necessary knowledge to solve real-world challenges and address complex problems.[31]

STEM skills are also important to many professional occupations and trades across the mining industry. Already digitalisation and technology is transforming mining skills with traditional mining trades increasingly incorporating elements of computing, and new career paths such as mechatronics and virtual reality advancing the digital ambitions of mining companies.

[28] op. cit. Minerals Council of Australia, September 2022, p. 7.
[29] EY, *Future of work: The economic implications of technology and digital mining*, report commissioned by the Minerals Council of Australia, released February 2019.
[30] Deloitte Access Economics, *Economic contribution of the mining and METS sector: Australia Estimates*, report commissioned by the Minerals Council of Australia, released 3 June 2021.
[31] Department of Education and Training, *Support for Science, Technology, Engineering and Mathematics (STEM)*, Australian Curriculum web page, Australian Government, 6 October 2021, viewed 23 November 2022.

Given predictions by the National Skills Commission that STEM occupations will increase 12.9 per cent by 2026, the narrowing pipeline to STEM careers needs to be reversed to ensure the minerals industry can secure the workforce needed now and into the future.[32]

Concerns include the volume of STEM subject being taught by 'out-of-field' teachers in schools, teacher quality in vocational education and training, declining enrolments in STEM subjects/courses (senior secondary through to tertiary), and the lack of diversity in the STEM pipeline.[33]

Rapid changes in innovation and technology in the mining industry mean the skills profile of the workforce needs to transform to keep pace, building new capabilities for Australia. EY examined the impact of innovation and technology on future skills in the mining industry. EYs analysis found new technology and innovative practices will enhance performance and productivity of 42 per cent of Australian mining jobs, with redesign and upskilling across a further 35 per cent of occupations leading to more valuable employment opportunities.[34]

Box 2: Queensland Future Skills Partnership

The Queensland Future Skills Partnership Pilot Program is a partnership between Advance Queensland BHP Mitsubishi Alliance (BMA), TAFE Queensland and Central Queensland University.[35] The program enables existing workers, particularly in regional locations, to acquire new skills in new technologies, such as cyber security, data management, Supervisory Control and Data Acquisition (SCADA)

Targeted at the resources sector, skills are transferable to other sectors such as defence and agriculture.

Training includes 12 accredited skill sets or a non-accredited program covering 10 micro-credentials.

Roles emerging through the continued evolution of the industry, which have been fuelled by digital transformation include:

- Automation Engineer: Contributes to the production, development and management of autonomous mobile and fleet systems in line with requirements
- IROC Controller: Works remotely with onsite operations teams and liaise with other controllers to optimise production at automated mine and/or port operations across the value chain
- Operators – Port Control: Contributes to the controlling and monitoring of automated port operations (a higher skill level than the average Machine Operator occupation)
- Operator – Mine Control: Contributes to the controlling and monitoring of automated mine operations and production (as above).

Training courses focused on contemporary and future skills to produce job-ready graduates are essential and an industry-led education and training system is vital to aligning needs with outcomes. Partnering with industry is the most effective way for public and private training providers to identify skills shortages, reconfigure roles and careers, and anticipate future workforce requirements.[36]

Digital transformation also provides the opportunity for existing workforces to transition into higher skilled roles. People with experience in mining are highly valued and as plant and equipment is replaced, original equipment manufacturers deliver onsite upskilling for experienced workers.

[32] National Skills Commission, *Australia's shift to a higher skilled, services-based economy*, Insights web page, 7 December 2021; and Sue Thompson, *Student educational aspirations and attitudes towards STEM*, Article from the Australian Council for Educational Research, Teacher Magazine, 7 June 2021 – all viewed 24 November 2022.
[33] School News Australia, *STEM classes taught by teachers outside of their field of expertise*, May 12 2020; Steph Delaporte, *STEM education in Australia*, 9 June 2020, World Strides Educational Travel & Experiences; Op. cit. Sue Thompson, 7 June 2021 – all viewed 24 November 2022; and, op. cit. Minerals Council of Australia, September 2022, pp. 8-10.
[34] EY, *The Future of Work: the Changing Skills Landscape for Miners*, report prepared for the MCA, February 2019, p. 2.
[35] Advance Queensland, Queensland Future Skills Partnership, program web page, Queensland Government, 22 July 2022, viewed 25 November 2022, https://advance.qld.gov.au/industry/queensland-future-skills-partnership.
[36] op. cit. Minerals Council of Australia, 29 March 2022, p. 18.

This training ensures employees are able to use the equipment safely in their current role and provides a transferable skill - deepening the skills in Australia's labour force.[37] The challenge is ensuring appropriate recognition through accredited qualifications.

Box 3: Rio Tinto automation qualifications

Rio Tinto launched Australia's first accredited automation qualification in partnership with South Metropolitan TAFE and the WA Government in 2019.

Originally accredited in Western Australia, Rio Tinto worked with the Australian Minerals and Energy Skills Alliance (AUSMESA) to get these qualifications into the nationally recognised Resources and Infrastructure Industry Training Package. Courses were released in October 2022:

- RII21222: Certificate II in Autonomous Workplace Operations – Data driven processes in an autonomous workplace and the human-machine interface
- RII41522: Certificate IV in Autonomous Control and Remote Operations – Control centre operations and navigating complex control systems for automated operations, fixed and mobile plant and equipment.

Key considerations for the White Paper

In order to maximise the benefits of transformation associated with digitalisation and emerging technologies, the frameworks, policy settings and mechanisms established need to provide a solid foundation for the acquisition, recognition and transferability of skill. They also need to support continued transformation through digitalisation and emerging technologies, and foster collaborative research and development.

To maximise the benefits of transformation associated with digitalisation and emerging technologies, the MCA recommends the White Paper terms of reference consider and prioritise:

- Formalised identification of new skills in digital transformation for existing workforces
  - Collaborative approach across government and industry to identify new skills acquired by existing workforces as part of the digital transformation of mining and allied industries (civil construction, manufacturing, agriculture and defence), and recognise them through a formal qualification that will support transferability
- Recognition of new and emerging occupations by the Australian Bureau of Statistics
  - To enable accurate labour market data for workforce planning, development and recognition of skills and training packages, careers promotion and facilitation of relevant skilled migration pathways
  - Incorporating new occupations in a comprehensive national workforce plan
- Program, policy and regulatory settings to strengthen the mining innovation ecosystem
  - For example, maintain and grow support for industry-orientated research and innovation and progress new technologies through the readiness levels – as recommended in The Digital Mine report[38]
- Support for initiatives to inspire the aspiration of the next generation of STEM professionals such as the International Mathematical Olympiad, which Australia is hosting in 2025
- Work with State and Territory government's on initiatives to boost STEM teacher quality.

[37] op. cit. Minerals Council of Australia, September 2022, p. 18.
[38] op. cit. Minerals Council of Australia, September 2022 pp. 8-9.

5. LABOUR FORCE PARTICIPATION

- Developing and growing a quality skills and training workforce and supporting infrastructure will ensure learners are provided with the optimal setting to develop the skills, knowledge and capabilities necessary thrive in modern workplaces.
- Collaborative partnerships (across industry, government, and education and training), which apply best-practice models and principles of innovation in the development of modern pathways to skills and employment will help drive improved participation and labour market outcomes.
- Skilled migrants are a small (0.7 per cent of the mining workforce) but vital source of talent. In the current skills and labour crisis, weaknesses in the skilled migration system need to be addressed to improve business confidence, and maintain Australia's profile as an attractive destination for global talent.

Skills, education and training, upskilling and reskilling

Skills shortages in the mining workforce

Addressing skills and labour shortages is a global challenge. As the nation navigates the economic recovery of the COVID-19 pandemic and impacts of low productivity growth, fortifying the integrity and stability of Australia's skills and training sector is an important foundation, and continued priority for the minerals industry.

A substantial growth in workforce size, combined with tightening of the labour market has seen the mining industry experience acute skills shortages that are driving up costs and reducing production.

The most critical professional roles for the mining industry are mining engineers, geotechnical engineers, metallurgists and geologists.

The National Skills Commission Skills Priority List 2022 found that the number of occupations in shortage grew by nearly 50 per cent from the previous year, underlying the severe constraints in the current labour market.[39] The expanded priority list encompasses newly listed occupations relevant to the mining industry, including miners, drillers, engineers (chemical, materials and electronics) and technicians (metallurgical, materials and mechanical).

Recent forecasts by PwC indicated that between 2020 and 2040, there would be a 21 per cent increase in demand for 21 per cent mining engineers (from 3,900 to 4,732) and geotechnical engineers (from 1,500 to 1820), and a 29 per cent increase for metallurgists (from 960 to 1234).[40]

Member companies of the MCA also reported on critical occupations across operations. Noting the acute supply and demand gap, companies identified that immediate, tripartite (industry, government and training provider) intervention is required to secure an accessible and sustainable pipeline of talent now and into the future. The key occupations reported by industry include mining engineers, metallurgists, geologists, electricians, mine surveyors, auto electricians, diesel fitters, and drillers, miners and shot firers.

This is reflected in the Internet Vacancy Index (IVI), a monthly count of online job advertisements compiled by the National Skills Commission. The September 2022 report confirmed the average IVI has increased across these occupations significantly since 2018. For example, between 2018 and 2022, the IVI for mining engineers increased 54 per cent (970 versus 637), for geologists and geophysicists it increased 165 per cent (334 versus 126) and for drillers, miners and shot firers, it increased 51 per cent (863 versus 570).

[39] National Skills Commission, *2022 Skills Priority List* and *Key Findings Report*, Australian Government 2022, viewed 7 October 2022.
[40] AusIMM, *A critical moment – the supply and demand of mining, metallurgical and geotechnical engineers in the Australian resources industry*, 2021.

In addition to key occupations, the mining industry is also experiencing skills gaps in support services needed for sites to run, such as chefs. Anecdotal evidence suggests increasing difficulty in attracting candidates to these roles, especially for apprenticeships.

Coordinated industry investment in skills and education

As the global fight for talent exacerbates the already critical skills shortages Australia is experiencing across many sectors, promotion of career pathways and investment in education and skills related initiatives that drive the talent pipeline are essential. Through the MCA's Mineral Tertiary Education Council (MTEC), the industry has collectively invested more than $65 million in skills and education programs since 2000, benefitting thousands of graduates.

MTEC is a unique and powerful model for strategic and purposeful industry investment in minerals related tertiary education initiatives that build sector capacity and aim to increase the supply and quality of suitably qualified professionals for the minerals industry.

To date, industry investment in a range of initiatives – from promotion of the multitude of careers in mining and future skills mapping through to curriculum updates, development of programs, new courses and innovative pilots – has resulted in:

- Greater awareness of mining occupations
- Increased enrolments in programs that are pathways to occupations in mining
- Improved curricula reflective of modern mining and aligned with future needs of industry
- More pathways to careers in mining.

In 2022, the MCA also started a multi-year campaign to promote the essential role of minerals and metals in everyday life and the highly skilled and rewarding careers on offer. As the campaign evolves, there will be an opportunity to showcase specific occupations and the education pathways for these occupations.

This complements significant company investments in programs that support skills and education – including development of training courses, innovative programs and new career pathways.

Workforce planning

At its core, mining is a people business and the long-term success of the industry depends on the vitality of its workforce, which is influenced by numerous factors, including the:

- Global fight for talent and acute skills and labour shortage – reliable access to skilled workers
- Perceptions of careers in the mining industry – talent pipeline
- Rapid digital transformation of mining – impact on operations, roles and opportunities
- Global transition to net zero – growth in minerals production, size and shape of workforce
- Education, skills and training ecosystem – modern, fit-for-purpose pathways and offerings
- Skilled migration system – transparency, reliability and navigability of the system.

Workforce planning is central to responding to/managing these factors, including understanding the broader employment landscape, identifying emerging occupations, confirming priority areas for skilling/upskilling and understanding workforce mobility.

Given the economic significance of mining, noting the ongoing efforts of industry to arrest chronic and emerging skills shortages, and the rapid rate of growth across the industry, planning for the pipeline of skilled workers is a priority.

The independent workforce planning of Jobs and Skills Australia presents an opportunity to establish a comprehensive view of this pipeline in the broader employment landscape – including skills needs of emerging industries and occupations, as well as cross-industry skills compatibilities and tensions (oil and gas, manufacturing, defence industry, construction and professional and scientific services).

A skills system for the future workforce

As highlighted in Section 3. Future of work and implications of structural change, the energy transition and decarbonisation are further shaping the skills required across industry, with new occupations emerging. Technology is transforming mining skills with traditional mining trades increasingly incorporating elements of computing, and new career paths such as mechatronics and virtual reality, creating new capabilities for Australia.

Looking ahead, the industry's future prosperity will continue to depend on a professional and semi-professional class of highly skilled and technology-literate technical experts, including operators, engineers, environmental scientists, geologists, geophysicists, mathematicians, as well as specialists in new and emerging occupations.

The technology changes present opportunities for the existing workforce to upskill and take on more challenging roles. It also presents opportunities for highly skilled specialists from non-traditional occupations to use their skills in a dynamic and highly integrated workplace.

This will require an education, training and skills system that is accessible, responsive and functional – including a mix of modern, accessible pathways, accelerated options for training, support for transitions, and a sector workforce supported to deliver quality.

Developing and growing a quality skills and training workforce and supporting infrastructure will ensure learners are provided with the optimal setting to develop the skills, knowledge and capabilities necessary thrive in modern workplaces. This is particularly important for regions, as access to quality education and training pathways is a key challenge.[41]

Modernising pathways (in collaboration with industry) will better align the needs of industry and aspirations of contemporary learners, and be more accessible for cohorts underrepresented in the national workforce, including women, mature aged workers, people with a disability and Indigenous Australians.

For example, rigid four-year apprenticeships no longer serve the needs of job seekers or employers – best practice, proactive models that lead to outcomes need to be the focus. BHP successfully piloted a two-year, nationally accredited apprenticeship through its self-funded FutureFit facilities.

Box 4: Preparing for a career in mining

Launched in 2020, the BHP's FutureFit Academy is part of a new national training program designed to bolster Australia's skills base and create new career pathways into the mining sector. An innovative approach to training, the Academy's fit-for-purpose maintenance training programs are run in dedicated learning centres in Perth, Western Australia, and Mackay in Queensland.

In FY2021, the Academy welcomed over 500 apprentices and trainees, with strong demand for future intakes, and deployed the first graduates to permanent jobs across BHP's Australian operations.

Students of the Academy earn a salary while they are studying. The purpose-built learning centres feature the latest immersive virtual reality technology combined with workshop learning designed to provide students with the training they need to competently and safely carry out their work in field.

The Academy has two training options offering nationally-recognised certification:

- Maintenance traineeship – a 12-month Certificate II in Engineering – Production Technology, focused on preventative maintenance
- Trade apprenticeship – a two-year program offering a full-trade qualification and the skills to perform preventative maintenance, diagnostics and repairs

Academy programs are nationally accredited, and supported by BHP's partnerships with Central Queensland University Australia and North Metropolitan TAFE, Western Australia.

[41] Access to quality education and training is further explored on page 15 in the subsection on Reducing barriers and improving labour market outcomes.

Key considerations for the white paper

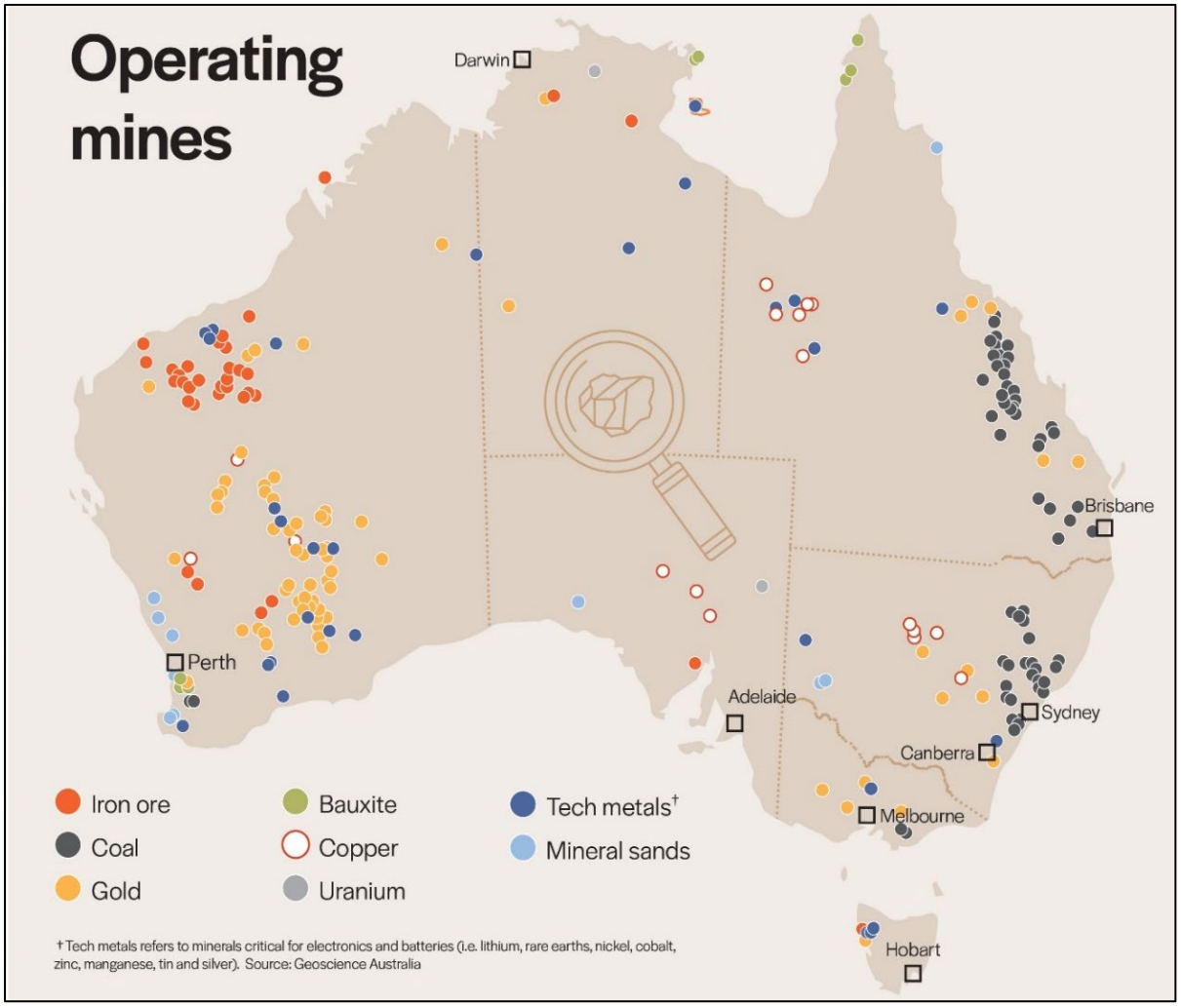
The frameworks, policy settings and mechanisms to support skills and training need to cater to a diverse range of learners and learning styles across, and be responsive to changes across the labour market and within industries. To support outcomes in skills and training, the MCA recommends the White Paper terms of reference consider and prioritise:

- Engagement with the mining industry as a priority on the workforce planning activity of Jobs and Skills Australia – including cross-industry workforce analysis of mining, oil and gas, manufacturing, defence industry, construction and professional and scientific services.
- A mix of modern, accessible skills pathways, developed in collaboration with industry – including accelerated apprenticeships (using best practice models with demonstrated success, such as BHPs FutureFit Academy), micro-credentials and bridging/stackable, short-burst courses (for upskilling, reskilling or skills top-up)
- Developing and growing a quality skills and training workforce and supporting infrastructure.

Reducing barriers and improving labour market outcomes

To consider the enablers and barriers to participation and improve labour market outcomes, the geographic profile of the mining industry is an important consideration. There are over 200 operating mines in Australia, the majority are located in regional Queensland, Western Australia and New South Wales, with growing industries in South Australia, Tasmania, Victoria and the Northern Territory.

Figure 1: Map of Australia's operating mine sites, by commodity



With a strong interest in building a diverse workforce reflective of the communities in which mining operates, the industry recognises its responsibility to support the socio-economic development of those communities and regions. Many companies take a broad view, seeking to ensure shared benefit from minerals development via direct involvement – through local employment, training and procurement – and voluntary social investment (to support broader community development).[42]

Over time, approaches to social investment have expanded from sponsorships and donations for community events to include long-term partnerships and strategic investment contributing to priorities in community and regional development plans. Such approaches focus on building long-term capability and resilience, and addressing structural barriers to sustainable economic growth.[43]

Industry commitments under native title and voluntary agreements have sought to support the economic aspirations of Aboriginal and Torres Strait Islander communities. This has led to sustained investments in tailored skills and employment pathways in addition to billions of payments for land access. Mining has also been a key driver of the Indigenous business sector since 2006.[44]

Despite support and investment in programs and initiatives to promote participation and incentivise regional living, barriers to workforce participation exist – often exacerbated in the remote and regional setting in which the mining industry operates.

Barriers

Liveability is a major issue across regions, with limited access to housing and low housing affordability, general cost of living pressures, security, and lack of social and community options (e.g. childcare, health services and social activities) a key hindrance to both attraction and retention of workers.

Education and training is another area of concern in regions, which not only affects the immediate attraction and retention of workers, it also hinders the early and ongoing development of future talent pipelines. The main challenges for education and training in regions include:

- Quality and access to training for both skilled and unskilled workers – either to get candidates work-ready or to provide opportunities for skills development and experience for staff retention
- Shortage of appropriately skilled teachers, trainers and supervisors (particularly for apprentices and trainees) – this includes a lack of appropriate skilling for existing and incoming teachers and trainers
- Lack of fit for purpose facilities to deliver training – particularly where new technologies and innovations could be used to enhance learning outcomes.

Improving outcomes

Supporting workforce participation requires innovation and lateral thinking across all parts of the pipeline, to encourage and facilitate study options, skills development activities and employment pathways in a holistic, lifelong learning model.

Industry has made significant investment in supporting education and training initiatives and pathways to employment. Individual company commitments to investing in skills and education have been substantial – from school education programs to internships, apprenticeships and scholarships, as well as undergraduate and postgraduate sponsorships and programs.

Priority cohorts for improved outcomes (with a focus on pathways to a career in mining), include Aboriginal and Torres Strait Islander people, women, people with disability, mature aged and young people, veterans and people with disability.

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[42] Minerals Council of Australia, *Submission of House of representatives Standing Committee on Industry, Innovation, Science and Resources inquiry into how the mining sector can support business in regional economies*, 21 August 2018, p. 8.
[43] ibid.
[44] M. Evans, C. Polidano, J. Moschion, M. Langton et al, *Indigenous Business Sector Snapshot Study 1.1,* University of Melbourne, 2021, p. 17.

Box 5: Community driving program to support Indigenous employment

In 2019, Newcrest Mining Limited established a Community Driving Program at its Telfer operation.[45]

Telfer is a copper-gold operation in Western Australia. A priority for Telfer over the life of its operations is working with the Martu people, the traditional owners of the lands on which mine is located, to provide employment and skills development opportunities.

The unique drive-in, drive-out Community Driving Program has assisted Telfer to increase its Indigenous workforce to more than 100 full-time employees by enabling them to travel safely to work from areas not serviced by flights.

More than half of Telfer's Indigenous workforce travels by vehicle from remote Western Desert locations, often hundreds of kilometres from their operations.

In December 2021, the MCA launched mining's first Industry of Choice Framework – built on five pillars of inclusion, diversity, sustainability, skills and the environment. Aimed at positioning mining as an attractive industry for the broadest possible pool of talent, it is a virtual guide to best practice and supports efforts to promote and achieve a more inclusive and diverse culture, workforce and industry.[46]

Areas of focus have included overcoming barriers for people with disability to work in mining, inclusive leadership and increasing representation of Indigenous Australians in professional occupations.

Box 6: Neurodiversity through our team's eyes

BHP launched a neurodiverse internship program in 2017, in partnership with the Autism Academy of Software Quality Assurance (AASQA).[47]

The program is aimed at focuses on providing career pathways for employees with variety of neurological conditions, including ADD/ADHD, Dyslexia, and Autism.

After their internship concludes, BHP help participants design and implement career plans by working with organisations such as Autism Academy of Software Quality Assurance, the International Software Testing Quality Board and Curtin University.

The most common fields are data science, software development and testing, engineering and environmental safety.

Key considerations for the White Paper

While industry has role to play through its continued commitment to the socio-economic development of the regions and communities in which it operates, addressing liveability issues requires leadership and direction from government, with supporting frameworks and investment.

Delivering outcomes-focused skills and training solutions will require innovation and place-based, collaborative partnerships across government, the education and training sector and industry.

To Increase enablers and reduce barriers to participation and improved labour market outcomes, the MCA recommends the White Paper terms of reference consider and prioritise:

- Cross-portfolio collaboration and place-based responses to address regional liveability challenges impacting workforce attraction and retention
- Tailored industry employment and training programs that target underrepresented groups, including women, people with disability and Aboriginal and Torres Strait Islander people

[45] Newcrest Mining, *Practical programs drive Indigenous employment*, 9 November 2019,viewed 28 November 2022.
[46] Minerals Council of Australia, *Industry of Choice Framework*, webpage, December 2021.
[47] BHP, *Autism acceptance alive and well at BHP*, 13 April 2021, viewed 29 November 2022.

- Tailored approaches to achieve Traditional Owner aspirations for jobs, skills and business opportunities for young people, to work on country and in their communities – including early engagement with industry to work with and better leverage their investment
- Innovative policy settings and initiatives to increase the talent pipeline and address skills shortages – such as improving incentives for mature Australians, people with disability and veterans to voluntarily re-enter the workforce.

Migration settings as a complement to the domestic workforce

The Australian mining industry remains committed to employing Australians, leveraging skilled migration to address skills in critical shortage and 'hard to fill' roles. Approximately 0.7 per cent of the workforce is secured through temporary skilled migration, accounting for only 3.1 per cent of all temporary skilled workers in Australia.[48]

The profile of Temporary Skills Shortages TSS (subclass 482) visa (and its predecessor the 457 visa) holders in the minerals sector are overwhelmingly professionals, managers and tradespeople (which collectively make up over 95 per cent of TSS visa users) who receive an average total remuneration of $163,900 per annum (compared to the all industries average of $104,500).[49]

As a small but vital source of talent, it is imperative the skilled migration system is easy to navigate, fit-for-purpose, and efficient.

Challenges of the current system

Currently, industry has low confidence in the system, experiencing persistent challenges in processing of visa applications (delays and transparency of data), arduous sponsorship requirements, complex/confusing processes and, restrictive occupations lists and age requirements.

This hinders the ability to place skilled migrants quickly and efficiently into critical and hard to fill roles, making employers hesitant to pursue talent through this avenue, with positions remaining open in some instances rather than exploring recruitment through the skilled migration system.

Where employers pursue this option, they are competing with jurisdictions like Canada and Germany that have more streamlined processes and appealing options, for example express entry for skilled workers and skilled trades (Canada), fast-track skilled worker, professional or academic skilled worker and longer-term skilled job seeker pathway to residence permit (Germany).[50]

With the current skills and labour shortages, inefficiencies, lack of transparency and unnecessary burdens threaten the competitiveness of Australian skilled migration in the international market.

The minerals workforce

The National Skills Commission Skills Priority List 2022 found the number of occupations in shortage grew by nearly 50 per cent from the previous year, underlying the severe constraints in the current labour market.[51] The expanded priority list encompasses newly listed occupations relevant to the mining industry, including miners, drillers, engineers (chemical, materials and electronics) and technicians (metallurgical, materials and mechanical).

The pipeline for most minerals related higher education graduates has experienced notable decline since 2015. For example, mining engineering graduates have declined by three quarters from 333 in 2015 to 87 in 2021.[52]

[48] Department of Home Affairs –*BR008 Temporary resident (skilled) report at 30 September 2022,* Australian Government, table 1.22.
[49] ibid, table 1.12 and table 1.09.
[50] Government of Canada, *Immigration through express entry*, web page, 16 November 2022, viewed 28 November 2022; and Germany Visa, *New rules for working in Germany explained*, website, 2022, viewed 28 November 2022.
[51] National Skills Commission, *2022 Skills Priority List and Key Findings Report,* Australian Government 2022, viewed 28 November 2022.
[52] Peter Knights, *Australian graduate engineering statistics,* 6 May 2022, prepared with the Australian Network of Mining Engineering Educators.

As opportunities across the minerals industry continue to grow, an additional 2,800 mining engineers are expected to be employed domestically up to 2026.[53]

Access to skilled migrants is critical to respond to the immediate divide between supply and demand over the coming years.

Box 7: Masters in Engineering bridging program for skilled migrants

La Trobe University developed a Masters in Engineering bridging program targeted at skilled migrants.

Based on La Trobe's work integrated learning (WIL) model, the program allows students to gain paid Australian work experience while they obtain their Masters in Engineering.

The year-long program is delivered through a one-month intensive face-to-face block, followed by 11 months of WIL (four days' work, one day online study).

Packaged as an industry scholarship, the cost per 12-month placement is $55,000.

The program is fully accredited by Engineers Australia.

Key considerations for the White Paper

The frameworks, policy settings and mechanisms required to position migration as a complement to the domestic workforce need to be simple, flexible and efficient.

The current review of Australia's migration system, which will inform a Strategy: A Migration System for Australia's Future (the Strategy) provides an opportunity for the Government to deliver practical changes, address system weaknesses and improve business confidence. The MCA, in consultation with member companies, will provide input into this review.

Priority changes industry will advocate for include increasing transparency of visa processing and improving processing times, removing restrictive occupation lists, relaxing age requirements for high-income roles, as well as expanding pathways and leveraging permanent residency as an incentive in the global war for talent.

To position migration as a complement to the domestic workforce, the MCA recommends the White Paper terms of reference consider and prioritise:

- Ensuring the Australian Skilled Migration System remains internationally competitive
  - Improving processing times, removing restrictive occupation lists, and relaxing age requirements for high-income roles and leveraging permanent residency as an incentive in the global war for talent
- Improving business confidence in the system
  - Clearing the back-log of applications, establishing and providing a real time dashboard on visa processing times, and increasing case management support for applications in priority industries
- Expanding skilled migration pathways to lower skilled roles that would not ordinarily be accommodated as a response to the skills crisis
  - Improve the government's initiative of addressing labour shortages by applying the Pacific Australia Labour Mobility scheme for drillers and driller offsiders – addressing acute labour shortages, transferring skills, creating wealth and shared prosperity.

[53] Australian Government, *Mining employment outlook*, Labour market insights website, 10 September 2021, viewed 28 November 2022.

6. PAY EQUITY AND EQUAL OPPORTUNITIES FOR WOMEN

- The minerals industry is taking a coordinated approach to building a more inclusive workforce, with a focus on eliminating sexual harassment and addressing barriers to participation – these efforts are ongoing.
- Substantial progress has been made over the past two years on addressing sexual harassment in the industry, with rates of sexual harassment reported to have decreased from 40 per cent to 32 per cent (below the national incidence rate of 33 per cent).
- The gender pay gap in mining for 2020-21 was 14.3 per cent, compared to the all industries average of 22.8 per cent.
- Access to paid parental leave, flexible work arrangements and affordable childcare are essential to give families greater choice in how they manage work and care responsibilities and support women to remain engaged in the workforce and/or transition back to work when they are ready.

Benefits of a more inclusive workforce

The benefits of a more inclusive workforce are well understood, they lead to improved culture, safety, creativity, staff engagement and retention, better decision making and problem solving, increased productivity and therefore profitability, and greater innovation.[54]

The Australian mining industry's core value and commitment is the safety, health and psychological wellbeing of its workforce, where everyone who goes to work returns home safe and healthy.

Inclusive and respectful workplaces are more psychologically safe workplaces; this is not only about gender, but also about ensuring all workers are protected from bullying, discrimination, intimidation, harassment, coercion, racism and violence. It is also important to acknowledge and address intersectional discrimination, where different aspects of a person's identity can expose them to overlapping forms of discrimination and marginalisation.

Gender pay gap

The Workplace Gender Equality Agency (WGEA) acknowledged the mining industry is one of the industries leading the way and driving change in terms of gender equality best practice.[55] Industry supports closing the gender pay gap at work, particularly given it will take 26 years to close the gender pay gap in Australia at the current rate of progress.[56]

The gender pay gap in mining for 2020-21 was 14.3 per cent, compared to the all industries average of 22.8 per cent.[57] While positive to note the industry is well below the national average, there is still significant work to close this gap.

Gendered segregation in industry is a significant driver of pay inequality and is particularly notable in the mining industry.[58] For example, in technical fields, pay discrepancy is largely due to working overtime in technical trades, and these trades are under-represented by women. As such, the issue is more complex than a pay per hour discrepancy, but reflective of structural issues that less women may be able to work overtime.

[54] Diversity Council of Australia, *2021-2022 Inclusion@work index: Mapping the state of inclusion in the Australian workforce*, 2022; Deloitte and the Victorian Equal Opportunity and Human Rights Commission, *Waiter, is that inclusion in my soup? A new recipe to improve business performance*, 2013; JobAccess, *The benefits of an inclusive and diverse workforce*, seminar, 3 April 2019; Emine Yuvuz, *The benefits of Diversity & Inclusion*, Work Logic, 21 April 2022; and Diversity Resources, *Benefits of Inclusion in the Workplace*, 22 November 2021 - all viewed 23 November 2022.
[55] R Cassells and A Duncan A, *Gender Equity Insights 2021: Making it a priority*, BCEC and WGEA Gender Equity Series, Issue #6, March 2021, BCEC at Curtin University and WGEA, 2021, p 6.
[56] op. cit. R Cassells and A Duncan A, March 2021.
[57] Workplace Gender Equality Agency, *Gender equality insights across time*, WGEA Data Explore, 2022, viewed 23 November 2022.
[58] Minerals Council of Australia, *Submission to Review of the Workplace Gender Equality Act 2012*, 26 November 2021, p. 8.

These issues, along with flexibility and part time employment are all important elements to consider in addressing the gender pay gap.[59]

Companies are following reporting requirements under the Workplace Gender Equality Act (2012) and working to improve performance across gender equality indicators.

Box 8: Taking gender equality action

St Barbara is at the forefront of inclusion and diversity.[60]

In 2021, 33 per cent of directors were women and the proportion of women across the Australian workforce rose to 28 per cent.

Nil gender pay gaps in like-for-like roles have been achieved across the St Barbara Group and their Australian operation's overall pay gap is down to 7.65 per cent.

St Barbara have achieved the he Employer of Choice for Gender Equality citation from WGEA for nine consecutive years.

St Barbara have also joined 418 global companies across 11 industries in the Bloomberg Gender Equality Index, which tracks the performance of public companies committed to disclosing their efforts to support gender equality.

Equal opportunities for women

Greater economic participation of and equal opportunities for women are critical to achieving gender equity – and support the productive capacity of the economy.

In the midst of the current skills and labour shortages, opportunities for highly rewarding, highly paid careers in mining continue to grow and the industry is actively interested in increasing the representation of women across the workforce.

While Australia has demonstrated its commitment to workplace gender equality reporting over the last forty years, and has placed first in women's education since 2014, the focus on reporting versus action, coupled with the current rate of progress and reported decline in ranking (particularly for the economic participation of women from 14th to 70th) highlights the need for more action.[61]

Twenty years ago, Australian mining employed only 9,000 women. Six years ago, 33,000. Today, more than 52,000 women comprise 20 per cent of the mining workforce.[62] In the last 15 years, the number of female managers in the mining industry has increased from just over 1,000 to more than 5,500 today, a fivefold increase.[63] There been an increase of over 200 per cent in women in technical and trade roles, and almost a 400 per cent increase in women in operator roles.[64]

There are numerous systemic and structural barriers to women's participation, including a perceived lack of flexibility in operational roles and challenges associated with time away from family in fly-in-fly-out (FIFO) arrangements, as well as access to appropriate childcare options.[65]

Companies are improving organisational frameworks to improve opportunities for women and increase attraction and retention, realising that these same frameworks are required for broader organisational and strategic success. Examples of action companies are taking to increase participation and improve opportunities for women include:

[59] op. cit. Minerals Council of Australia, 26 November 2021, p. 13.
[60] St Barbara Limited, *Diversity matters to us*, web page, 2022, viewed 29 November 2022.
[61] M Glennie, A Medes Borges, and C Schmid, *Bridging the gap? An analysis of gender pay gap reporting in six countries*, The Global Institute for Women's Leadership, 2021, p 20 and 51.
[62] Australian Bureau of Statistics, *Labour Force, Australia, Detailed*, August 2022, released 21 September 2022, table 6.
[63] Australian Bureau of Statistics, *Labour Force, Australia, Detailed*, August 2022, released 21 September 2022, EQ06
[64] ibid.
[65] Workplace Gender Equality Agency, *St Barbara: Attracting women to a male-dominated industry*, case studies web page, Australian Government, 2017, viewed 1 December 2022.

- Changing recruitment practices – including pathways, advertising, selection criteria, interview questions (values based versus technical) and formats (requiring diversity on panels)
- Mentoring, training and networking – establishing groups or specific support programs at different organisational levels
- Policy changes to address gender pay disparities – annual pay gap reviews, addressing disparities at time of recruitment
- Changing job role design – including the clothing and personal protective equipment, amenities as well as the task breakdown, requisite tools etc.
- Increasing representation of women in leadership positions and on boards to increase the representation of the interests of women in these forums
- Flexible work arrangements – 75 per cent of employers have a formal policy or strategy, including formal carers leave (95 per cent), flexible working hours (72 per cent), job sharing (57 per cent), and part time work (88 per cent)[66]
- Paid parental leave – 78 per cent of employers offer paid primary carer's leave and 65 per cent paid secondary carer's leave[67]
- Addressing workplace culture and safety issues – implementing respectful workplace strategies, policies and procedures
- Anonymous surveys and mechanisms for reporting
- Transition back to work supports – school-friendly hours, preferential parking
- Targeted programs.

Box 9: Contemporary pathways for women in mining

Rio Tinto are looking at innovative ways to break outdated recruitment practices, seeking to expand their talent pool and provide more contemporary pathways for women into industry.

In June 2022, Rio Tinto launched two programs, which offer a 12-month course, combining on-the-job and classroom training, supported through mentoring, networking, coaching and educational programs.[68]

- Transferable Pathways: aims to fast track women who haven't worked in mining before going into Operational leadership and Planner and Scheduler roles.
- Women in Leadership: aims to improve gender diversity in frontline leadership roles in Rio Tinto's Aluminium operations across eastern Australia and in New Zealand.[69]

An emerging risk to achieving a gender balance in the mining industry is males still dominate the science, technology, engineering and mathematics (STEM) education pipeline at universities. At Australian universities in 2020, 37 per cent of STEM students were women, compared to 34 per cent in 2015 (based on trend growth a gender balance in enrolments will not be achieved until 2093).[70] This presents a further challenge in securing the talent pipeline required for the minerals industry.

[66] op. cit. Workplace Gender Equality Agency, 2022, viewed 23 November 2022.
[67] ibid.
[68] Rio Tinto, *Rio Tinto female recruitment drive attracts more than 3000 applicants*, media release, 7 June 2022,viewed 28 November 2022.
[69] Rio Tinto, *Women in Leadership Program*, Careers web page, viewed 29 November 2022.
[70] Department of Industry, Science and Resources, *University enrolment and completion in STEM and other fields*, STEM equity monitor web page, viewed 28 November 2022.

Safety, health and psychological wellbeing

The minerals industry has made substantial progress over the past two years on addressing sexual harassment in the industry, following the Australian Human Rights Commission's Respect@Work report.[71]

The results of the fifth national survey on sexual harassment in Australian workplaces reflect this, with rates of sexual harassment in the mining industry reported to have decreased from 40 per cent to 32 per cent, now below the national incidence rate of 33 per cent.[72] The survey shows that 62 per cent of women experienced sexual harassment in the past 5 years (compared with 74 per cent in 2018 survey) and 25 per cent of men (compared with 32 per cent in 2018) in the industry.[73]

Despite this improvement, sexual harassment is unacceptable and the industry will continue to work to eliminate this behaviour.

To implement the mining industry's commitment to eliminating sexual harassment, the MCA developed an Industry Code, supported by a comprehensive toolkit that establishes clear expectations on companies in developing a culture of respect that empowers individuals to raise concerns in a supportive and protected way.

The MCA established a Psychosocial Risk Management Working Group. Specific focus will be on the prevention of the range of psychosocial risks including bullying, discrimination, intimidation, harassment, coercion, racism and violence. The group will drive the mining industry's approach to psychological wellbeing, building on the industry's work on mental health (Blueprint for Mental Health and Wellbeing) and suicide prevention (Mates in Mining) and the continued action to eliminate sexual harassment (Respect@Work).[74]

Key considerations for the white paper

It is important the frameworks, policy settings and mechanisms be calibrated to respect for women, achieving gender equality and increasing choice and flexibility for women and families, to promote and support participation.

To promote and support participation of women in the workforce, the MCA recommends the White Paper consider and prioritise:

- Implementation of the 55 recommendations from the Respect@Work Report underpinned by practical and victim-centric approaches
- Implementation of the recommendations contained in the WGEA Review Report to deliver improved reporting, processes and data collection[75]
- Swift implementation of commitments that support women's safety, equity, opportunity and economic participation, including parental leave and childcare.

[71] Australian Human Rights Commission, *Respect@Work: Sexual Harassment National Inquiry (2020) Report*, March 2020.
[72] Human Rights Commission, *Time for respect: Fifth national survey on sexual harassment in Australian workplaces*, November 2022, p. 112.
[73] op. cit. Human Rights Commission, November 2022, p. 109.
[74] Minerals Council of Australia, *Blueprint for Mental Health and Wellbeing*, 2015; Mates in Mining, *Suicide prevention in the mining industry*, website, 2022, viewed 1 December 2022; and Minerals Council of Australia, *Respect@Work*, web page, 2021, viewed 1 December 2022.
[75] Department of the Prime Minister and Cabinet, *WGEA Review Report: Review of the Workplace Gender Equality Act 2012*, December 2021.

1.1. APPENDIX: RECOMMENDATIONS TO PRODUCTIVITY COMMISSIONS

The priority policy reforms recommended in the Submission to Productivity Commission inquiry into Australia's productivity performance aim to lift productivity growth in the Australian mining industry, and apply more broadly across the economy.

Improving Australia's productivity performance depends on government providing:

- Stable and internationally competitive business tax settings to attract investment in innovative, lasting and large-scale projects
- Emission reduction policy settings that enable and encourage least-cost abatement of CO2 while providing affordable and reliable energy, including through the development and deployment of all low and zero-emissions technologies.
- More efficient project approvals processes to encourage investment in mines, processing plants and manufacturing facilities
- Regulatory frameworks and processes that enable the mining industry to adopt new and transformative technologies
- An industry-led education and training system to ensure Australian mining has a highly skilled, flexible and resilient workforce
- Modern workplace relations rules to foster more innovative, productive and adaptable enterprises
- Rules-based trade agreements and refined regulatory settings for international investment to expand trade and investment opportunities for Australian businesses.[76]

[76] Minerals Council of Australia, *Submission to Productivity Commission inquiry into Australia's productivity performance*, 29 March 2022, p. 5.