AusIMM

Whitepaper: Pathways to Professional Occupations in the Australian Resources Sector

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Executive Summary

Australia's resources sector relies on a highly skilled professional workforce to discover, produce and process the materials required for contemporary life. Across the minerals value chain, at all levels of industry, and from major miners to METS firms[1] and research institutions, the sector's professional capability underwrites our leadership position and contribution to positive social, economic and environmental outcomes globally.

The imperative to attract, retain and develop professionals in both established and emerging disciplines is well understood by stakeholder across the sector. Data from the Jobs and Skills Australia Jobs and Skills Report 2025 indicates mining engineers and geologists are among the professions where the gap between supply and skills suitability is greatest across the entire Australian industrial ecosystem. Fitters, machinists and other trade-qualified professionals also face long and short-term training gaps. Qualified professionals working in disciplines and industries from which the mining sector might traditionally 'pull' workers are in similarly short supply. [2]

This data reflects long-term trends for mining and the broader Australian economy. The recent closure of specialist courses supplying the resources sector, alongside increased demand for Australian minerals, materials and products demonstrates the salience of the sector's workforce challenge for the broader community.[3]

This Whitepaper provides analysis and recommendations to help secure a long-term supply of skilled professionals for our sector, and aims specifically to:

1. Define anticipated shortfalls in key disciplines, focussing initially on mining engineering, geology, metallurgy and advanced processing disciplines.
2. Identify existing pathways for vocational, graduate and postgraduate-qualified professionals, as well as individuals moving into resources from other sectors.
3. Review current programs to expand and diversify professional pathways, identifying opportunities to scale successful initiatives.
4. Interrogate the mobility of established (i.e. mid-career) professionals working both within and beyond the resources sector.
5. Seek stakeholder feedback on additional programs and measures required to secure the sector's long-term skills pipeline.

Engagement with state and federal governments, universities, industry bodies and members throughout 2025 has allowed AusIMM to define three focus areas and a series of initial recommendations (Table 1). These form the basis for the current phase of consultation, which will continue into2026.

AusIMM also invites interested parties to provide feedback directly via policy@ausimm.com and to register for regular updates via AusIMM News.

1 METS is an acronym is for Mining Equipment, Technology and Services.

2 Jobs and Skills Australia, 2025. Connecting for impact: Aligning productivity, participation and skills – Jobs and Skills report 2025. Canberra.

3 ABC News, 2025. Federation University scraps one of Australia's oldest geology courses as students turn away from mining. Ballarat. AusIMM, 2019. Resources Education Collaboration Summit – Report. Melbourne. Weblink enclosed.

Table 1. Focus areas, recommendations and consultation questions

Focus area	Recommendations	Questions
Existing pathways and initiatives to meet workforce needs	Expand Associate and Vocational Degree programs. Expand industry-linked postgraduate research to develop niche skillsets. Expand the delivery of industry experience and work-based training for university students.	Does the Whitepaper accurately capture existing pathways into the resources sector's professional workforce?
Emerging pathways, entry and exit points	Deliver comprehensive professional development programs for established professionals. Provide professional development through courses, conferences, microcredentials and chartered professional programs. Enhance future workforce and skills forecasting and establish relevant datasets for established (mid-career) professionals. Map the career pathways of established professionals, to understand mobility within and from beyond the sector.	What are the key entry and exit points for professionals working in the resources sector? What are the key factors influencing professional access to and mobility within the sector?
Opportunities to expand and diversify professional pathways	Provide stable funding for niche but highly critical degrees. Support students to study regionally. Establish a cross-sector coordinating body with authority to progress options and actions.	What are the most valuable programs for the sector to adapt and scale nationally? What additional measures are required to expand and diversify pathways into the resources sector?

About AusIMM

The Australasian Institute of Mining and Metallurgy (AusIMM) is the peak body and trusted voice for professionals working in the resources sector.

Established in 1893 and operating under Royal Charter, we exist to advance the resources sector for the benefit of the community. Representing a community of more than 15,000 professionals working across 110 countries, our members are active at all levels of the sector; in fields ranging from engineering and geoscience through to processing, manufacturing, environmental management and social performance; and can be found at the senior-most levels of industry, government and academia.

We fulfil our purpose of advancing resources for the community's benefit through our role developing and upholding technical standards, delivering world-class professional development and convening our industry's leaders to shape policy and provide balanced, credible insights as part of well-informed public dialogue.

The Policy Forum and Whitepaper process described in this paper is a core element of our advocacy and policy-making function, designed to convene and engage subject matter experts to provide specific and actionable recommendations on the strategic priorities that define the future of the resources sector.

AusIMM's focus at these Forums reflects the defined priorities and insights of our members, and the six pillars of our Advocacy Framework, namely:

1. The future of the sector, including its workforce and technical capability.
2. Community and environmental sustainability.
3. Professional best practice.
4. Professional recognition and mobility.
5. Diversity, equality and opportunity.
6. Health and safety leadership.

The Whitepaper process: Collaborating to integrate analysis and scale high impact programs

AusIMM's unique position within the sector allows us to convene industry, government and education leaders to identify solutions and shape the policy and programs that will help deliver a skilled talent pipeline for the future industry.

Indeed, this Whitepaper consultation has emphasised the exponential impact of coordinating education and workforce initiatives across all levels of industry , government, higher education and the professions.

The consultation itself has involved development of several Whitepaper editions, which has formed the basis for AusIMM Forum and further consultation throughout 2025. The structure, focus areas and key data inputs have evolved over each edition of the paper to reflect engagement outcomes and issues salience as they have emerged.

This is currently reflected in our focus, in this edition, on existing and emerging pathways, and opportunities to scale identified high-impact programs for the sector.

AusIMM and our partners have identified a series of priority initiatives that can be scaled and deployed in mining regions around Australia, including the MiEX program delivered with our industry and kindred body partners.

The Whitepaper has also formed the basis for AusIMM contributions to a range of workforce-focussed initiatives currently underway across government, industry and the higher education sector, including

- The Productivity Commission's 'Five Pillars of Productivity' inquiry, noting the Commission's focus on 'Building a skilled and adaptable workforce,
- Industry, workforce and skills development planning being undertaken by the Queensland, New South Wales and Victorian Government,
- Parliamentary inquiries into higher education governance and standards, and regional economic diversification.

Whitepaper contributors have emphasised the need to canvass and integrate findings from these inquiries into the sector's plan for securing its future talent pipeline.

Comment from the CEO

Stephen Durkin FAusIMM, CEO AusIMM

In a period of rapid trade, technological and political change, the Australian resources sector has both the opportunity and responsibility to advance the national interest by unlocking a more diverse, sophisticated domestic industrial ecosystem.

It will be the expertise of our skilled professional community that defines the future of our sector, and determines the contribution we make to Australia's social, environmental and economic prosperity into the future.

We need a sustainable supply of qualified professionals with a diverse range of expertise, including capability in new areas of minerals processing and beneficiation, if we are to capture a greater share of the critical minerals value chain, extend our global leadership position and` provide new value to trading partners as a trusted supplier of high quality minerals and materials.

Right now, that professional pipeline is not guaranteed. The purpose of this Professional Pathways Whitepaper consultation has been to engage stakeholders across industry, government and the higher education sector to understand the challenges and identify the most important steps we can take to deliver a highly-skilled resources workforce.

The answer lies in expanding and diversifying pathways into the resources professions.

Central to AusIMM's findings over the course of engagement throughout 2025 are ten key recommendations, each designed to expand and diversify pathways into professional roles:

- **Expanding Associate and Vocational Degree programmes** to attract talent from technical and trade backgrounds.
- **Strengthening industry-linked postgraduate research** to build niche skillsets and deepen sector expertise.
- **Scaling work-based training and industry experience** for university students, ensuring graduates are ready for the realities of the sector.
- **Delivering comprehensive professional development programmes**—from courses and conferences to microcredentials and chartered pathways—so professionals can adapt and thrive.
- **Enhancing workforce forecasting and data analysis** to better understand career mobility and address skills gaps.
- **Mapping mid-career pathways** to support professionals transitioning within and into the sector.
- **Securing stable funding for critical degrees**, particularly in regional institutions and advanced technical fields.
- **Supporting regional students** through scholarships and integrated industry programmes.
- **Establishing a cross-sector coordinating body** to drive progress and ensure alignment between government, industry, and education.
- **Lifting tertiary attainment and harmonising pathways** to open doors for underrepresented groups and enable flexible career movement.

These recommendations are not just aspirations—they are actionable priorities that will underpin the sector's continued leadership and contribution to Australia's prosperity.

They are also the product of close engagement and collaboration between stakeholders across the sector. Shared leadership will be required to refine and implement these proposals and this will be the focus of continued engagement into 2026.

AusIMM remains committed to convening stakeholders, scaling high-impact programmes, and integrating analysis across all levels of industry, government, and education. Together, we can build a professional community that is skilled, adaptable, and ready to meet the challenges of tomorrow.

Stephen Durkin FAusIMM CEO

Context

Australia has a limited range of tertiary and training pathways into professional occupations within the resources sector, especially in technical fields such as engineering, geoscience, metallurgy and material processing. Compounding this challenge are persistent concerns regarding a lack of diversity in industry, across several demographics, and increasing competition with other sectors to attract and develop professionals in areas such as social and environment performance, automation and data analytics.

The constrained supply of graduates and established professionals in the Australian resources sector jeopardises its global leadership position and, in turn, its role as the anchor point for Australia's broader industrial base. The sector delivers social and economic returns that rely on a sustainable supply of suitably qualified professionals.

The issue is not new. The Government's 2010 Resourcing the Future report found:[4]

> *The domestic supply of mining engineers and geoscientists will not be sufficient to meet demand over the next five years with a shortfall of around 1,700 and 3,000 respectively. However, there are large numbers of people with these qualifications currently working in other occupations.*

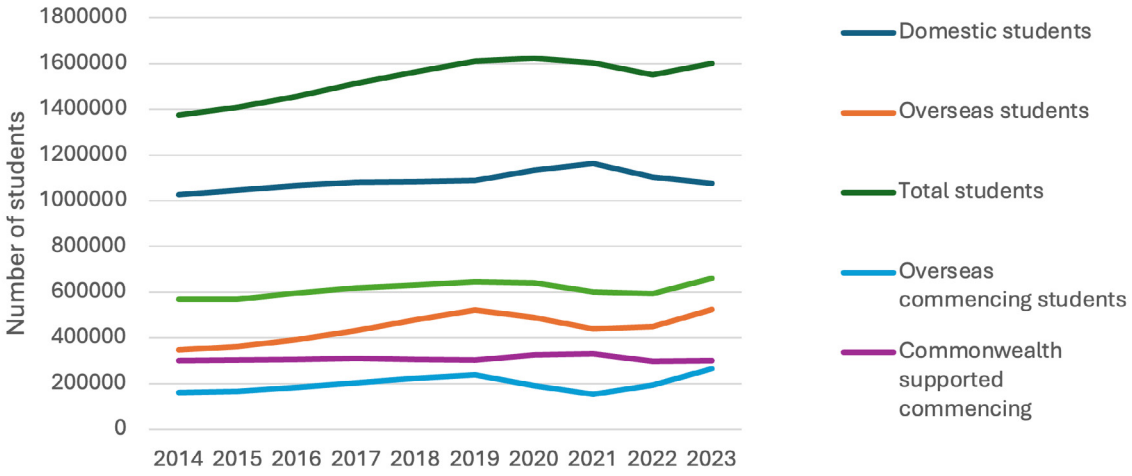
A decade later, a 2023 National Resources Workforce Strategy again found:[5]

> *Despite strong growth and high wages, both enrolments and completions in resources related education and training have significantly decreased…, between 2015 and 2019, completions in mining engineering, geological sciences and VET drilling or plant operations declined by 49 and 70 per cent.*

A general decline in post-pandemic domestic university enrolments, high attrition rates for students in Science, Technology, Engineering and Mathematics (STEM) degrees, the closure of niche technical degrees, a buoyant labour market, and a range of 'hard' and 'soft' limits on international student enrolments, have added further pressure for the higher education providers delivering professionals to the industry. From 2022-2023, undergraduate enrolments decreased by 2.4%, to their lowest level since 2017 (Fig. 1).[6]

These factors favour universities with low concentrations of international students, which are generally not those providing engineering and other industry-relevant degree programs. At the same time, the measures have not arrested the trend in course cancellation for regional universities providing niche geology, engineering and other advanced technical degrees for the sector.[7]

Figure 1: Domestic undergraduate commencements and participation - Australian Universities 2014 - 2023[8]



4 Australian Government, 2010. Resourcing the Future: National Resources Sector Employment Taskforce – Final Report. Canberra.

5 Australian Government, 2021. Australia's National Resources Workforce Strategy. Canberra.

6 Australian Government, 2023. Key finding from the 2023 Higher Education Student Statistics. Canberra

7 AusIMM, 2019. Resources Education Collaboration Summit – Report. Melbourne.

8 See above note 6.

Domestically, the sector struggles to engage students in the final years of secondary schooling and early phases of university study.

Partly, this stems from a lack of awareness regarding the role of mining within the broader industrial ecosystem, a lack of understanding regarding the breadth of careers that can be pursued within the sector, and assumed incompatibility with young Australians' environmental, climate and social values. A focus on secondary school exit scores can also leave students inadequately prepared for STEM study, increasing the likelihood of non-completion and further reducing the opportunity to engage with and explore resource sector careers.[9]

What emerges clearly from these trends is that the pressure on the sector's professional pipeline is both an enduring and multi-factorial challenge. The purpose of this paper, therefore, is to provide an overview of the current landscape and outline a series of recommendations to both expand and diversify pathways into industry. The Whitepaper identifies opportunities to scale current programs that will help to equip professionals with the skills and adaptive capabilities needed to lead industry as it moves 'down the minerals value chain' and enables a more dynamic Australian industrial ecosystem.

9 AusIMM, 2021. A Critical Moment - The supply and demand of mining, metallurgical and geotechnical engineers in the Australian resources industry. Melbourne

Three focus areas for professional pathways in resources

This Whitepaper has formed the focal point for sector-wide consultation on the priorities, options and next steps to expand and diversify pathways into the professional tiers of the resources workforce.

AusIMM's engagement has included direct input from state and federal government agencies, industry representatives, high education providers, peak bodies and elected representatives. We have also sought the input of members across our 15,000-strong global professional community. The Whitepaper incorporates findings and outcomes from government workforce reviews, the AusIMM Resources Education Collaboration Summits hosted in 2019 and 2021, and the associated Critical Moment Report published by our Future Workforce Working Group.

Importantly, the Whitepaper consultation does not set out to 'solve' all 'problems' regarding Australia's resources sector workforce or broader higher education system. Rather, the Whitepaper focusses on defining a pathway for the long-term management and delivery of suitably qualified, skilled and experienced for our sector based on the specific focus areas identified through our engagement to date.

Engagement to date has identified three priority focus areas to expand and diversify pathways into Australian resources sector professions, per Table 2 below.

Table 2: Focus areas for the current phase of engagement

Focus area	
1	Existing pathways and initiatives to meet workforce needs
2	Emerging pathways, entry and exit points
3	Opportunities to expand and diversify professional pathways

Recommendations to expand professional pathways

Whitepaper engagement has generated ten key recommendations, which now form the basis for continuing AusIMM consultation through this Whitepaper process and in partnership with industry, government and education partners.

1. Expand Associate and Vocational Degree programs to pull people from technical and trade occupations into advanced engineering, geoscience, metallurgy and material processing professions.
2. Expand industry-linked postgraduate degrees to develop the niche skillsets, knowledge and industry capability required to capture more of the minerals value chain.
3. Expand the delivery of industry experience and work-based training for university students, to strengthen connections to the sector.
4. Deliver comprehensive professional development programs that include core 'industry readiness' competencies in areas such as mine operations, management and governance, alongside more advanced technical fields.
5. Deliver these professional development programs in a trusted 'by industry, for industry' format and across a range of channels, to maximise access and uptake - including through professional development courses, credentials, conferences and chartered professional programs.
6. Enhance future workforce and skills forecasting and establish relevant datasets, particularly to better understand the inter and intra-sector movement of 'established' technical professionals and which demographics are sector is currently failing to reach.
7. Map the career pathways of established (mid-career) professionals across a range of disciplines, demographics and industries.
8. Provide stable funding for niche but highly critical graduate and postgraduate mining degrees, particularly in engineering, geoscience and metallurgy, and particularly for regionally based higher education institutions.
9. Support students to study regionally by scaling work and industry-integrated courses, scholarships and experience programs at the vocational and undergraduate levels.
10. Establish a cross-sector coordinating body with authority to progress these and other matters with input and representation from government, industry and higher education.

Focus one: Existing pathways to a professional qualification

Focus Question

What pathways to a professional qualification currently exist in the resources sector, beyond those identified in this Whitepaper?

Recommendations

1. Expand Associate and Vocational Degree programs.
2. Expand industry-linked postgraduate research to develop niche skillsets.
3. Expand the delivery of industry experience and work-based training for university students.

The natural starting point for the Whitepaper process has been to define the range of existing pathways into the resources professions. The section that follows seeks to outline each type or category of training that is relevant here, with examples of programs to explain their role within the broader training and education framework. The examples cited are not intended to be exhaustive, but indicative.

Whitepaper engagement has defined five key components of the current resources training and education landscape that lead to a professional role:

- Pre-tertiary pathways
- Undergraduate university study
- Postgraduate university study
- Higher degree research
- Professional development programs.

This section focusses on pre-tertiary and tertiary pathways, with professional development discussed in the context of mid-career entry and exit points (Focus Area Two).

Pre-tertiary pathways into the resources sector

Vocational and dual sector pathways into the resources sector

In the vocational education space, there are a range of combined apprenticeship, work experience and associate degree programs delivering a mix of technical and professional skillsets for the sectors future workforce.

Dual apprenticeship programs

Degree-based apprenticeship programs have emerged as a recent response to provide prospective workers with seamless progression from vocational study (at the Advanced Diploma AQF Level 6 standard) to undergraduate (AQF Level 8) programs. Several degree apprenticeships include paid mining industry work experience programs.

Whitepaper contributors have nominated the RMIT Degree Apprenticeship in Mechanical Engineering[10] as a prime example of this undergraduate vocational model. The core element of this program include:

- A five-year agreement signed between the student and employer, including a training contract and salary and employment conditions for the duration of the employment,
- An allocation of 40% of the students' time to study, and 60% to working with the relevant employer, over the course of the five-year program,
- Graduation at the conclusion of the five-year program with two qualifications an Advanced Diploma of Engineering (Mechanical) and a Bachelor of Engineering (Mechanical Engineering) (Honours),

Figure 2: RMIT Degree Apprenticeship overview[11]

Course structure at a glance				
Degree Apprenticeship in Mechanical Engineering				
The degree apprenticeship ius comprised of two individual mechanical engineering course plans – the Advanced Diploma of Engineering (Mechanical) and the Bachelor of Engineering (Mechanical Engineering) (Industry practice) (Honours)				
Year 1	Year 2	Year 3	Year 4	Year 5
Advanced Diploma of Engineering (Mechanical) *Two days per week on campus study per semester.*		Bachelor of Engineering (Mechanical Engineering) (Industry practice) (Honours) *Two days per week on campus study per semester.*		
Paid employment and on the job training with a leading industry partner (the student's employer)				

Associate degrees

Developed as part of the Minerals Industry National Associate Degree (MINAD) project, associate degrees offer a stepping stone to the Bachelor of Engineering (Honours) degree, with credit transfer available to candidates who elect to pursue further study.

Associate degree pathways represent an opportunity to bridge knowledge gaps for those students who may not have achieved the requisite ATAR or have sufficient background in mathematics and science for direct entry to the BEng(Hons).

Table 3: Sample Associate Degree pathways into the resources sector

Program	Detail
Central Queensland University Associate Degree of Engineering	This 15-unit program is delivered online and designed to equip graduates with a knowledge of basic engineering principles, with opportunities to specialise in civil, mechanical and electrical fields.
University of Southern Queensland Associate Degree of Engineering Mining Engineering)	This program is structured similar to the Central Queensland University Associate degree but includes a mining specialisation developed as an outcome of the Minerals Industry National Associate Degree (MINAD) project.

Vocational degrees

The Australian Mining and Automotive Skills Alliance (AUSMASA) has also initiative a project to develop and expand 'vocational degrees', intended to build specialist technical knowledge and skills at a level equivalent to a bachelor's degree through a structured matriculation from vocational to university education.[12]

10 Further information on the RMIT program is available online.

11 Adapted from the RMIT course website.

12 Further information on the AUSMASA Vocational Degree program is available online.

Tertiary pathways into the resources sector

Context: Course recognition for mining-related degrees

As the peak professional association for people working across the resources sector, AusIMM is responsible for assuring the competency, qualifications and credentials of its members. AusIMM has therefore taken on a key role providing course recognition for mining-related specialist courses, in turn providing students and employers with assurance that the course will equip graduates with relevant technical knowledge and an appropriate understanding of the industry environment.

AusIMM reviews and endorses a range of undergraduate courses relevant to the industry, including in:

- Geoscience,
- Metallurgy, materials and chemicals engineering,
- Mining engineering,
- Geotechnical engineering, and
- Environmental science and engineering.

AusIMM also recognise four Associate Degree programs in mining engineering and geoscience, and a range of Graduate Certificate, Diploma and Masters programs.[13]

Undergraduate degree programs

Universities have adopted a range of models to deliver mining-specific undergraduate education, particularly in engineering fields. These include mining majors, honours programs and 'transfer' initiatives for those seeking to cross-skill or augment non-specialist tertiary qualifications.

Broadly, these programs aim to enhance the appeal of mining engineering specialisations for students, while ensuring courses are financially sustainable and industry relevant. They seek to balance industry-specific and transferable skillsets and are most often based on a 'core curriculum' plus 'bolt on' mining components.

Table 4: Sample Engineering Undergraduate pathways into the resources sector

Program	Detail
University of Queensland Bachelor of Engineering	The Bachelor of Engineering(Hons) with a Mining Engineering major is the primary industry-specific undergraduate program delivered at this university.
Monash University Bachelor of Engineering	Monash University offer a range of engineering specialisations as part of their Bachelor of Engineering (Hons) program, including civil and environmental engineering, along with a series of minors including in mining engineering.
University of Newcastle Bachelor of Engineering (Minig Transfer Program)	The University of Newcastle offer a Bachelor of Engineering (Mining Transfer Program) designed specifically to allow students completing their undergraduate study at the (regionally based) Newcastle campus to transfer to either the University of Wollongong or University of New South Wales to complete specialist mining studies.
University of New South Wales Bachelor of Engineering	The University Officers a mining engineering major as part of its Bachelor of Engineering program.

13 The full list of AusIMM-recognised courses is available online.

Undergraduate internship, cadetship and work experience programs

Internships offer students paid short-term on-site experience, engaging in hands on projects that enhance awareness of industry practices and the breadth of career opportunities across the sector. A key benefit of time-bound programs such as these is that they offer exposure and relevant work experience, without requiring students to obtain or commit to employment with a mining or METS firm in the future. They thus represent a high-value, low-risk work opportunity for students.

Cadetships combine ongoing tertiary study with paid work, providing cadets with an extended and well-rounded experience combining practical skills with theoretical understanding. Pragmatically, cadetships relieve undergraduate students of financial constraints that might prevent them from undertaking tertiary study or relocating in order to pursue their preferred degree. A range of comparable programs are also offered to secondary, vocational and postgraduate students.

AusIMM and the Minerals Council have recently partnered with mining and METS firms to deliver and expand the scope of a new Minerals Industry Experience Program (MiEX), which has shown significant potential to scale nationally. Box 1 provides further detail.

Table 5: Sample internship and cadetship pathways into the resources sector

Program	Detail
Yancoal Cadetship Program	For current Year 12 high school students and recent high school graduates considering a career in mining. The program provides financial support, mentoring and valuable 'hands on' experience at our mine sites.
BUMA Surveying Cadetship Program	The BUMA Surveying Cadetship Program provides full-time employment throughout the cadet's studies. This encompasses training and qualification for the cadet's remote pilot license, along with various site rotations to enhance industry exposure and skill development.

Box 1: The Minerals Industry Experience Program

The Minerals Industry Experience Program - MiEX

MiEX is a partnership between the Minerals Council of Australia, AusIMM, Cahoot Learning, Glencore, Idemitsu Australia, Komatsu and Rio Tinto to offer a unique paid industry experience for students who have completed their first year of undergraduate STEM study. The program takes place over two weeks and comprises both office-based and on-site learning and experience.

Week one is a comprehensive learning experience where participants attend a hub-based learning experience in one of the four locations: Queensland, Central Queensland, South Australia and Western Australia. Participants will engage in structured sessions to understand and discuss industry strategies, values and behaviours and explore the intricacies of minerals operations in a corporate setting.

Week two of the program is on-site, participants will spend up to four days a company's site, experiencing what life is like working in the minerals industry. Learn from experts as well as young people new to our industry and witness the real-world minerals value chain and modern operational practices.

By participating in the program participants will gain unique insights into the world of the Australian minerals industry on which our economy and the modern world rely, while getting paid. They will build strong connections with peers, industry leaders, technical experts and program administrators. Gain essential professional skills and experience and insight into the opportunities that the industry has on offer, facilitating informed decisions about future studies and career paths.

Inaugural delivery of the program in 2025 has indicated significant interest from students and industry partners, and AusIMM and the Minerals Council are pursuing opportunity to expand the delivery of this program around Australia.

Further information is available here.

Postgraduate programs

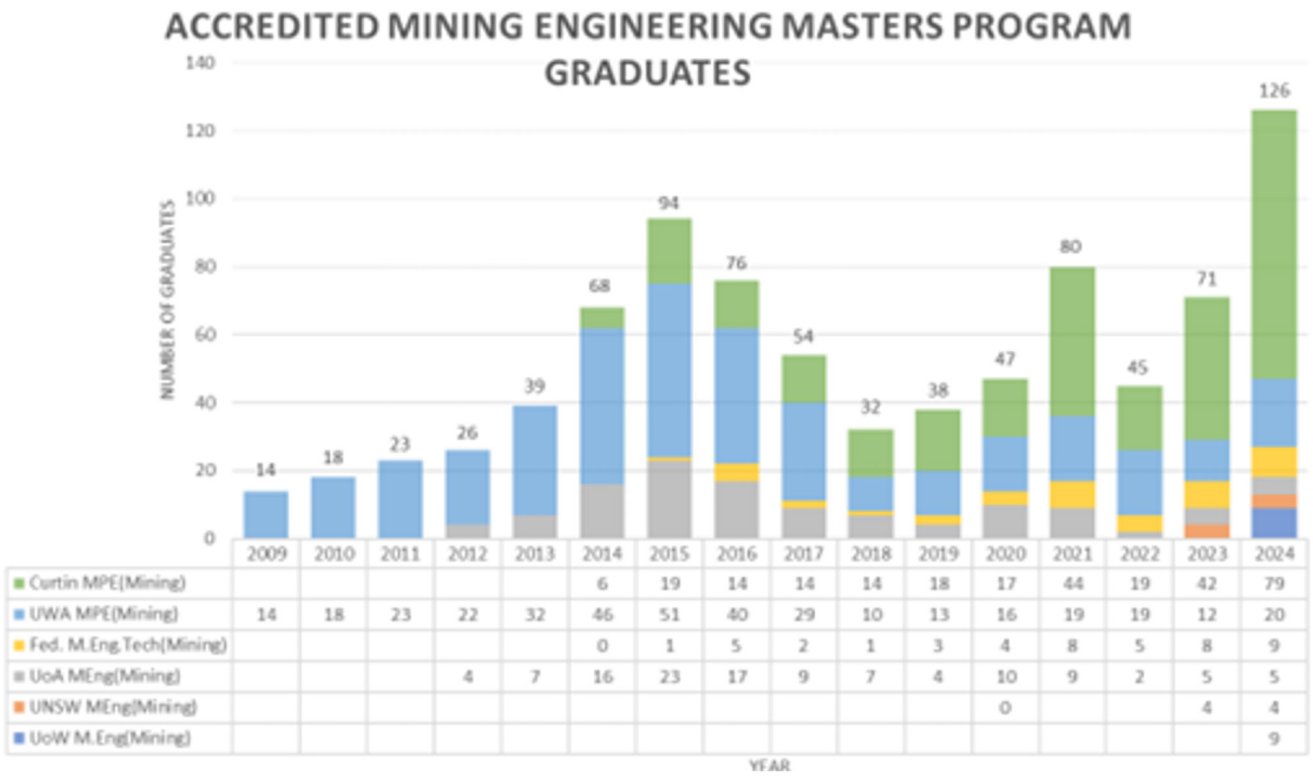
Within the broad postgraduate umbrella, Graduate Certificate, Graduate Diplomas, coursework Masters programs and Higher Degree Research programs are the key pathways of relevance to the resources sector.

Masters degree programs (coursework)

Analysis from the Australian Network of Mining Educators (ANMEE), a group comprising ten universities plus AusIMM and several industry bodies, describes an increase in postgraduate mining study between 2009 and 2024. According to the ANMEE Australian Graduate Mining Engineering Statistics Report (Appendix 1), there has been an almost ten-fold increase in mining-related postgraduate course completion since 2009, with growth most concentrated in Western Australian and New South Wales universities.[14]

This trend demonstrates both the relevance and viability of reliance on postgraduate pathways to develop advanced skillsets, particularly as the sector seeks to access and develop a more complex and diverse range of ore bodies, and move further down the value chain into refining and processing of raw materials.

Figure 3: Graduates from accredited Masters in Mining Engineering programs

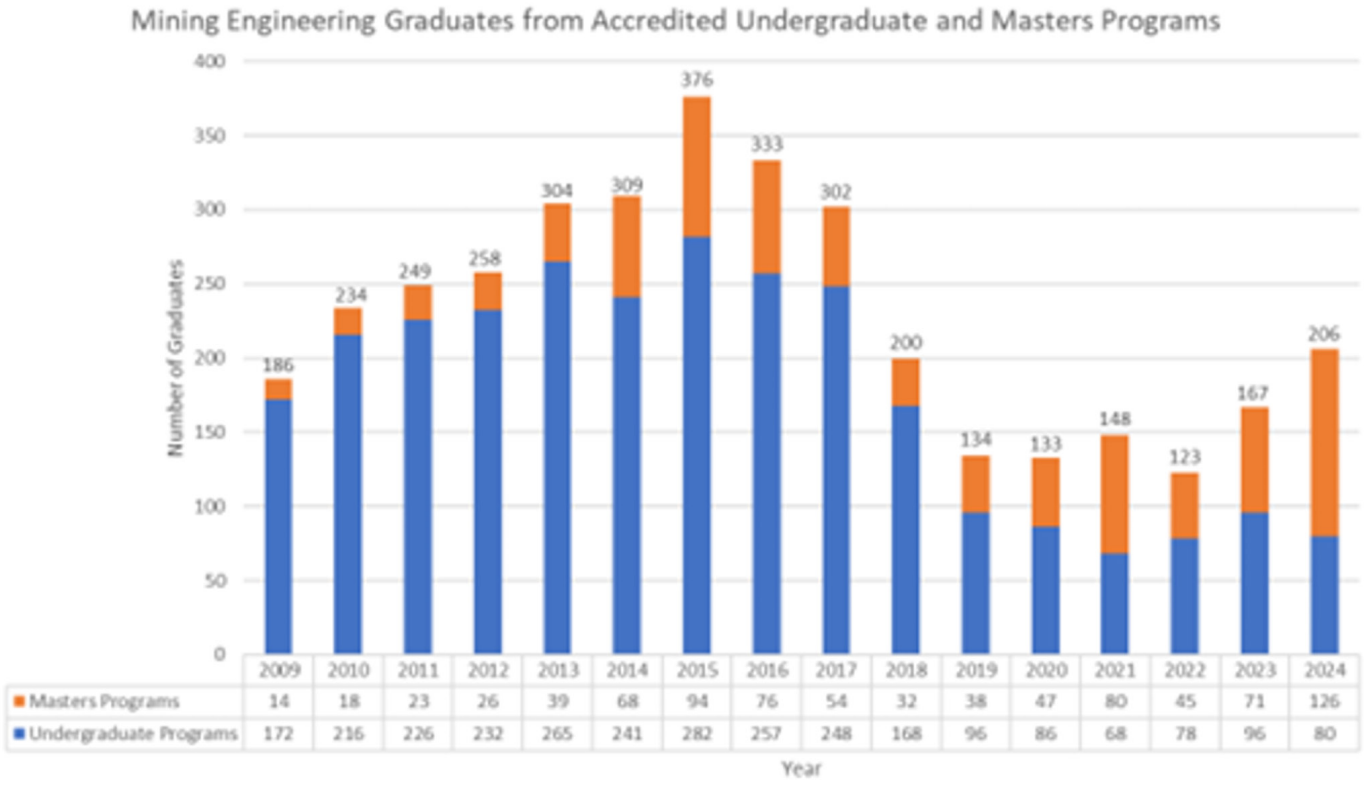


	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Curtin MPE(Mining)						6	19	14	14	14	18	17	44	19	42	79
UWA MPE(Mining)	14	18	23	22	32	46	51	40	29	10	13	16	19	19	12	20
Fed. M.Eng.Tech(Mining)						0	1	5	2	1	3	4	8	5	8	9
UoA MEng(Mining)				4	7	16	23	17	9	7	4	10	9	2	5	5
UNSW MEng(Mining)												0			4	4
UoW M.Eng(Mining)																9

14 The ANMEE includes Monash University, the University of Adelaide, the University of NSW, Central Queensland University, Federation University, the University of Queensland, the University of Wollongong, the University of Western Australia, Curtin University and the University of South Queensland. AusIMM is the sole participating professional association, alongside representatives from the SA Chamber of Mines and Energy, NSW Minerals Council, Queensland Resources Council and Minerals Council of Australia.

The same report cautions, however, that most graduates are international students, who routinely struggle to obtain the visas necessary to remain in Australia for long-term employment. The key insight from the data remains that postgraduate study continues to be the major pathway into resources specialisation for engineering students, with enrolments being close to double the figure for undergraduate mining engineering programs in 2024 (per Figure 4, below).

Figure 4: Comparison of undergraduate and postgraduate mining engineering graduate figures



The strong uptake of postgraduate mining engineering programs reflects a response by industry and universities to fill critical workforce shortages by attracting and reskilling professionals from outside the mining sector. Graduate diploma and certificate programs have played a key role here, in addition to masters programs, across engineering, resource development and mineral and metallurgical processing.

Graduate certificates and diplomas

Graduate Certificate and Graduate Diploma programs in mining, and mining-related specialisations, create opportunities for continuing professional development of the existing workforce, and also for qualified professionals from other industries and engineering disciplines to transition into areas of workforce shortage.

They have particular value for professionals with existing niche-skillsets – for example with particular industrial processes or mineralisations – to develop new knowledge and adapt these skillsets for other parts of the sector. Whitepaper contributors have emphasised that this will be increasingly relevant as Australia seeks to expand exploration, development, refining and processing of critical mineral products.,

The table below provides further detail on notable metallurgy programs delivered by Australian universities. Importantly, these are niche but high-criticality skillsets, with professionals in high-demand globally.

Table 6: Australian graduate diplomas in metallurgy and resource development

Program	Detail
Murdoch University Graduate Diploma in Extractive Metallurgy	This program provides specific training in core extractive metallurgy disciplines including hydrometallurgy, pyrometallurgy and process metallurgy relevant to mineralogy, all of which lead to specialised (and critical) careers in the resources sector.
Curtin Graduate Diploma in Metallurgy	This course has been designed for current professionals working in the minerals industry who are seeking to develop specialist extractive metallurgy knowledge.
UQ Thiess Institute	Thiess and the University of Queensland have codesigned three new postgraduate qualifications to deliver specialist technical knowledge in resource development and operations, along with mining foundations programs for professionals cross-skilling from other sectors.

In practice, there are a much greater range of educational pathways to a professional career in mining and resources. However, industry cannot rely on an opportunistic and unpredictable graduate supply chain.

Consultation as part of this Whitepaper process has clearly indicated that the sector needs to expand the range of reliable and high calibre sources of graduate talent available to it both now and into the future.

This means diversifying the source, educational pathway and industry and professional backgrounds of our highly-skilled workforce.

Focus two: Emerging pathways, entry and exit points

Focus questions

What are the key entry and exit points for professionals in the resources sector?

What factors influence professional access to and mobility within the sector?

Recommendations

1. Deliver comprehensive professional development programs for established professionals, including those seeking to 'cross skill' from other sectors.
2. Provide professional development through courses, conferences, microcredentials and chartered professional programs – in a 'by industry, for industry' environment.
3. Enhance future workforce and skills forecasting and establish relevant datasets for established (mid-career) professionals.
4. Map the career pathways of established professionals, to understand mobility within and from beyond the sector.

The resources sector has recognised the need to diversify and strengthen training and higher education pathways into the sector and has been working with government and industry stakeholders over an extended period to address shortfalls as they arise.

Many of the programs canvassed in the discussion of current pathways were initiated by industry through partnerships with education providers and government, often in response to acute and time-critical shortages.

Building on these programs, Whitepaper engagement to date has emphasised the importance of attracting and developing 'established' professionals, particularly those with relevant technical skillsets but no experience working directly within the industry.

Engagement has also highlighted a lack of understanding regarding the career drivers and dynamics impacting attraction and retention for established professionals, and the factors that lead individuals to move between roles across industries.

This section of the Whitepaper provides an overview of our current understanding of these factors, framed in terms of three clear messages:

1. Attitudes and interest are shaped at school.
2. The decision to pursue a career in resources crystalises at university.
3. Data and analysis regarding the motivating factors and 'career journeys' of established technical professional – there is a missing middle here.

This section of the paper then canvasses existing professional development programs, along with contextually relevant attraction and retention initiatives, and a short discussion of skilled migration as relevant.

Whitepaper consultation emphasises that this is one of the key areas of recent development as an 'emerging pathway' into industry.

Understanding attraction, retention and attrition

Attitudes and interest are shaped at school

A key insight from engagement with industry, government and university delegates to the AusIMM Professional Pathways Policy Forum was that attitudes are formed and decisions made regarding mining industry careers at the secondary school level.

This is consistent with national research undertaken by AusIMM in 2019 and 2021, as part of a collaboration with the Victorian Government to deliver a series of Resources Education Collaboration Summit. Contributors to AusIMM's 2019, 2021 and 2025 engagement initiatives have emphasised that:

- The imperative is to keep as many students engage in Science, Technology, Engineering and Mathematics (STEM) courses during their secondary schooling, to ensure they have the option to pursue mining careers in the future,
- Awareness and attitudes towards resources careers are formed at the school level, with teachers as the primary influencer of student perceptions and awareness regarding the breadth of professional resources in mining,
- Equipping educators with relevant contextual knowledge and material to engage students is therefore a key 'channel' to support broad interest in mining careers,
- Student interest in pursuing a career in resources increases with their appreciation of the sector's role within Australia's broader industrial ecosystem, its commitment to environmental sustainability and regional economic development, and the breadth of technological and scientific innovations emerging from the industry.[15]

These insights reflect broader trends across industries and around the world. A 2025 OECD report, *The State of Global Teenage Career Preparation*[16], noted that young people continue to aspire to a limited number of traditional occupations, and that these are often misaligned with actual labour market demands. The report emphasises the critical need for effective career guidance and employer engagement, particularly for high achieving students from less advantaged backgrounds.

Because Australian Tertiary Admission Ranks (ATARs) are fundamental determinants of university entry, students, their teachers and parents all place considerable weight on choosing subjects that will optimise their final result. In doing so, students sometimes unknowingly, restrict the range of study pathways and career options to which they have either access or exposure. Decisions about the level of mathematics to undertake, or whether to include a science subject, can limit student's capacity to pursue a STEM study pathway at university.

15 AusIMM, 2021, 'Young People and the Victorian Resources Sector: Research Report', AusIMM Melbourne, published at: Young People and the Victorian Resources Sector; AusIMM, 2021, 'Resources Education Collaboration Summit Report', AusIMM Melbourne, published at: ausimm_recs_report.pdf.

16 OECD (2025), The State of Global Teenage Career Preparation, OECD Publishing, Paris, https://doi.org/10.1787/d5f8e3f2-en.

The decision to pursue a resources sector career crystalises at university

A further opportunity to harness 'uncommitted' future talent lies in the pool of first year tertiary students who have selected a 'flexible first year' engineering option, or a generalised science degree. Where students are yet to select a specialisation, there is a window of opportunity for industry to engage proactively, shining a light on benefits and opportunities, both in the immediate and longer term.

Scholarships, paid vacation work, mentoring and leadership development opportunities are often cited as the avenues through which existing professionals connect to the resources sector. It is important therefore, that these opportunities are maintained and communicated to the university students at the early stage of their post-secondary studies.

The key challenge at the university undergraduate level is a persistently high level of attrition from key STEM disciplines, representing a preventable leakage of talent for industry. Over the last decade, student completion rates for degrees in the Natural and Physical Sciences have remained at less than 50%. While completion rates for Engineering degrees remain at between 35% and 40%[17]. A small proportion complete a different STEM degree, while a more substantial 7% move into a non-STEM field.

For students transitioning from school to university, the array of STEM possibilities on offer can seem overwhelming and academically inaccessible. Swinburne University analysis of the Australian Government's TCSI (Tertiary Collection of Student Information) data collected between 2021 and 2023, shows that domestic enrolments into STEM-related degrees showed a decline of almost 4.5%. And according to that report, the decline in enrolments for degrees in the Natural and Physical Sciences is as much as 11%[18]. While remaining places are currently filled by international students, uncertainty around the Government's future policy direction in this area threatens to undermine Australia's reputation as an education destination – further disrupting the pipeline of STEM talent.

As Figure 5 shows, only 7% of graduates in engineering and related fields are currently employed in the resources sector.

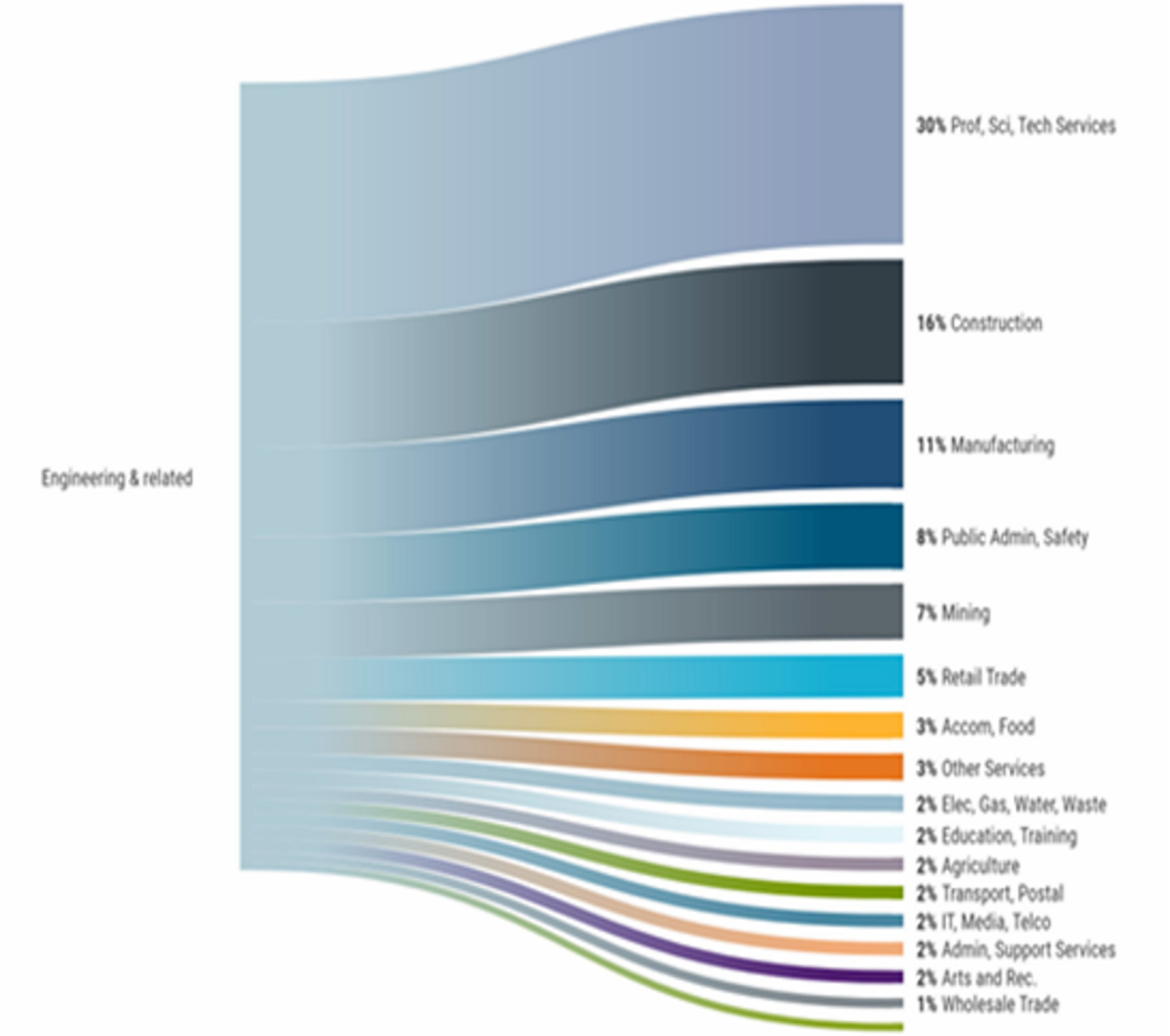
Poor academic achievement and time pressures are most often cited as reasons not to remain in tertiary education. Alleviating the pressure of combining work and study through scholarships and bursaries can prevent a student from choosing to drop out of study. However, financial assistance to individuals lacks scalability and is vulnerable to competing economic pressures borne by donors and sponsors.

Inadequate preparation for tertiary study is another key driver of attrition from STEM degree. Supporting students to prepare for and maintain their studies therefore represents a significant opportunity for the resources sector to expand the supply of prospective graduate professionals. This wrap-around support from peer networks, academic faculty and future employers, and professional associations such as AusIMM in the form of peer and industry mentoring, academic capability development and practical experience. Is critical Without these scaffolds in place, the level of student attrition rises, and increased participation is unrealised.

17 University enrolment and completion in STEM and other fields | STEM Equity Monitor | Department of Industry Science and Resources

18 New analysis reveals the 'brain drought' putting Australia's STEM future at risk | Swinburne

Figure 5: Engineering graduate employment by industry



We have a limited understanding of mid-career mobility, across the sector and between industries

Engagement throughout the Whitepaper process has consisted indicated a lack of data regarding the movement of 'established' professionals within the sector, as well as from other industries into the resources sector. This is a significant gap in the existing knowledge base, particularly given the long-term recognition that our sector faces acute skill and workforce shortages across a range of high-value professional disciplines, and the fact that many professionals with these skills are working in industries such as energy, manufacturing and construction.

AusIMM see opportunity to better harness the science, technology, engineering and mathematic skillsets of Australia's broader professional workforce by supporting professionals to transition and find roles within the resources sector. In practice, this means 'sharing' a professional workforce with related industries as part of a circular approach that sees our scientists and engineers contributing across mining, energy, manufacturing and other priority sections of Australia's broader industrial base. In this way, the resources sector can both contribute to and benefit from new sovereign industrial capacity.

The first step to delivering a more 'circular' professional ecosystem for Australian industry is to understand the 'journey' of established professionals. The objective here is to understand which sector our STEM professionals are working in, how mobile they are across sectors, and what support is required to help them cross-skill and fill roles within the resources sector.

AusIMM has initiated a research project with the Bankwest Curtin Economics Centre (BCEC) to better understand the utility of existing datasets from the Australian Bureau of Statistics Census of Population and Housing (Census) and Housing, Income and Labour Dynamics in Australia Survey (HILDA) as relevant for mapping the career pathways of established professionals in key disciplines.

Crucially, AusIMM anticipate that this analysis will demonstrate both the relevance and limitations of current datasets. Building a robust understanding of the workforce profile, experiences in the sector, demographics and market dynamics that will influence future supply and, in turn, training needs will priorities for future rounds engagement and analysis as part of the Whitepaper process.

We anticipate that the BCEC research will help to interrogate these matters, and identify required changes in the demographic composition, capability and structure of the resources workforce. This, in turn, can inform the development of training and education pipelines for the sector, and help industry to target programs that engage with relevant industries, demographic cohorts and overseas talent markets.

Accessing and cross-skilling existing professionals is a key opportunity

Engagement has indicated a clear need to access professionals with niche skillsets in fields such as chemical processing, metallurgy and advanced materials processing. In many cases, this will involve looking 'beyond' the resources sector to identify, attract and retain specialist professionals from other industries.

Similarly, AusIMM engagement has identified a significant opportunity to support professional already working in the resources sector to:

- Cross-skill and move between distinct specialisations – for example, by gaining exposure to different mineralisations or chemical processes,
- Build core technical and professional skillsets that will prepare STEM professionals for careers in mining, and to continue delivering industry-relevant continuous professional development programs,
- Support individuals seeking to move from trade-focussed roles into paraprofessional and professional disciplines (as explored in the discussion regarding tertiary and non-tertiary pathways, above).

The opportunity here is to enhance the 'circularity' of the STEM professional ecosystem, by unlocking opportunities for people to work across and contribute to a range of industries critical to the Australian economy and broader community.

By providing opportunities for specialists to move between industries, the sector can take advantage of the breadth of knowledge and experience generated in non-mining fields, and build capabilities that can su be applied across the broader economy.

Post graduate certificates, diplomas and master's degree programs represent an opportunity for industry to attract and upskill or reskill STEM graduates and professionals from diverse disciplines. Nevertheless, the resources industry must ensure it is positioned to compete for a finite pool of professional talent in a challenging social and economic environment.

While remuneration and working conditions are key attraction levers, the commonly held perception of mining as a cyclic 'boom/bust' industry can impact its competitiveness against industries such as construction, infrastructure, IT and manufacturing that exhibit less volatility in response to economic conditions (the recent pandemic being a notable exception). Where workforce expenditure waxes and wanes with the commodity price cycle, demand for qualified resources professionals similarly fluctuates.

Peaks in demand and associated remuneration across the industry in turn generates a spike in university enrolment across mining related degrees. Unfortunately, the 5-year lag from commencement to degree completion can result in an oversupply of graduates as a commodity boom period subsides. Consequently, this pool of qualified talent is then lost to other industries.

Current professional development pathways

Courses, conferences, professional networks and recognition

A core part of AusIMM's role as the peak professional association in the resources sector is to provide professional development and network opportunities that help both exiting and prospective professionals to pursue their careers in the sector.

AusIMM's support continuous development of technical skills, and also prepares professionals from beyond the sector for their roles in industry. Table ## provides an overview of key elements of AusIMM professional development offering.

Table 7: AusIMM professional development offering

Initiative	Purpose
Membership	Membership provides access to professional networks, geographical branches and technical societies including the Metallurgical, Geoscience, Geomechanics, Tenement Management, Social and Environment, Mining and Consultants societies. Branches in Australia and New Zealand, as well as International Chapters in more than 15 countries deliver a breadth of industry attraction and retention programs, including career promotion activities at local universities.
Technical conferences	AusIMM technical conferences provide world-class content for professionals working across all major mining disciplines, with programs designed and delivered by technical leaders. AusIMM also deliver a breadth of thought leadership and other feature events, including through our Thought Leadership Series, International Women's Day program and New Leaders Summit.
Online courses	AusIMM offers globally recognised mining courses focussed on technical best practice in fields such as social performance, mine closure, mine electrification and tailing management. These courses sit alongside an extensive portfolio of 'industry readiness' courses such as our 'Breaking the Surface' and 'Diversity and Inclusion' programs.
Chartered Professional Program	AusIMM provide a professional credential program involving multi-disciplinary assessment, which is designed to provide recognition for professionals and assurance for industry and the broader community regarding the expertise of professionals working in the Australian resources sector. Structured pathways for recognition, and continuous professional development requirements, ensure skills and competencies reflect the contemporary operating environment and requirements for best practice professionalism in the resources sector.
Mentoring program	AusIMM also delivers a flagship mentoring program to support individuals at various stages of their resources careers.

AusIMM also recognise and support the range of professional development and industry promotion activities delivered by our colleagues in the higher education sector, for example the University of Queensland's Foundations of Modern Mining program, and by kindred organisations such as AusIMM co-convened Women in Mining Networks.

Whitepaper contributors have emphasised the importance of these programs for attracting and supporting the continuous development of people already working in the sector. The opportunity to expand the range of modular professional development and higher education offerings in highly advanced fields (such as chemical processing) has been identified as a key area for further engagement, and is discussed at great length in Focus Area Three: Opportunities to Expand and Diversify Pathways.

Attraction and retention programs

The mining sector has also delivered a range of career-promotion and attraction programs targeting secondary school and university students. These typically feature a combination of marketing material, information brochures, teaching resources and an 'on-ground' presence at schools an universities through career fair days, STEM-focussed classroom initiatives and similar activities.

AusIMM's Student Chapters and New Professional Networks also provide a 'home' for STEM students and graduates with an interest in the sector, and play an important role raising awareness and promoting career opportunities in the sector.

While these activities relate primarily to attraction rather than education per se, they are an important part of the broader response from industry to attract, develop and retain skilled professionals.

Consultation throughout the Whitepaper process has emphasised the importance of these initiatives as a means of 'attaching' professionals to the sector. A key attitudinal trend for many young people with skills relevant to the resources sector is an attachment to their discipline, rather than an individual sector.

Students and new professionals thinking of themselves first as an 'engineer' or 'environmental scientist', and only then as a 'mining engineer' or 'resources professional'. Further research to understand this shift may yield valuable insights on the factors influencing attraction, retention and development within the industry.

Skilled migration

Skilled migration has likewise become an increasingly significant part of the broader response from industry to meet both short and mid-term workforce gaps.

Engineers Australia provides migration skills assessments for migrants with either accredited or non-accredited qualifications. Through its education arm, Engineers Australia also supports overseas qualified engineers to transition more readily into the Australian engineering workforce. Programs to address knowledge and skills gaps prepare migrants for Australian workplace culture and expectations assure 'job-readiness'.

As the training and development arm of Engineers Australia, Engineering Education Australia (EEA) provides face-to-face and online training to support continuing professional development and progression towards chartered status. To support skilled migrants, EEA offers two key initiatives:[19]

- Global Engineering Talent Program: This program connects skilled and experienced overseas-qualified engineers (OQEs) with employers and industry, helping them transition into the Australian engineering workforce.
- Professional Year Program: Prepares international graduates for an engineering job in Australia.

While skilled migration has not been a focus for Whitepaper consultation to date, industry and university contributors have highlighted the opportunity to consider how industry-readiness programs can be integrated with relevant postgraduate coursework programs and international student policies. The premise here is that job-readiness, employment and higher study programs can be corralled to strengthen the attachment of prospective migrants (with high-value niche skillsets) to the Australian industry.

19 See further at https://eea.org.au/

Focus three: Opportunities to Expand and Diversify Pathways

Focus Questions

What are the most valuable programs for the sector to adapt and scale nationally?

What additional measures are required to expand and diversify pathways into the resources sector?

Recommendations

1. Provide stable funding for niche but highly critical degrees.
2. Support students to study regionally.
3. Establish a cross-sector coordinating body with authority to progress options and actions.

AusIMM's Whitepaper engagement has identified several opportunities to expand and diversify pathways into key professional disciplines, including:

- Communicating and connecting with target audiences, including workers in trade and vocational occupations, prospective STEM undergraduate and graduate students, and skilled professionals in other industries,
- Supporting and advocating for tertiary institutions, particularly those operating in regional centres who deliver low-volume, high-criticality professionals (i.e. in advanced technical fields such as chemical processing and metallurgy),
- Lifting tertiary attainment through greater access and tertiary harmonisation.

The sections that follow provide further detail.

Communicating and connecting with the target audience

The recent Pathways Policy Forum, at which the first draft of this paper was tabled for discussion, noted the insufficient numbers of students embarking on pathways to a professional career in the Australian resources industry. The Forum identified a general lack of awareness and understanding about an industry that is often largely invisible to urban populations, and suggested that a more proactive approach is required to shine a light on the resources sector, particularly in relation to:

- The fundamental importance of mining and the criticality of mineral resources to 21st century society.
- The immense social and economic benefits of mining in relation to community development and employment.

The Forum further emphasised a need to engage educators and key influencers in promoting mining career pathways to high potential students by providing professional learning in STEM curriculum content, alongside information on career pathway awareness and resources to 'demystify' the industry and address concerns regarding environmental, social and governance performance, psychosocial safety, diversity and inclusion.

STEM undergraduate awareness of professional pathways into resources can be strengthened through strategic industry investment in programs and initiatives across the tertiary student lifecycle. As an example, the Optik internship program connects current engineering students at UTS and Sydney University with industry employers for a 12-week real world learning experience. Students apply theoretical learning to authentic industry challenges. In turn, employers forge connections with high potential talent, while also having the option to mentor and subsequently recruit new talent from the internship pool. The existing MiEX program (Box 1) provides similar exposure, albeit through a shorter and less technically intensive program targeted at undergraduate students from a range of disciplines.

The Prosple (www.au.prosple.com) website is a comprehensive platform designed to connect graduates and university students with employment opportunities and valuable experiences in various industries, including the Australian mining sector.
The website offers a user-friendly interface where students can explore a wide range of job listings, internships, and graduate programs tailored to their field of study and career aspirations.

Prosple collaborates with AusIMM and mining employers to advertise openings, ensuring that users have the best chance of securing a position in this competitive industry.

For those interested in pathways to the Australian mining industry, Prosple offers opportunities to gain hands-on experience through paid internships and unpaid virtual experiences. Requiring only an investment of time and effort on the part of the student, virtual experiences including those currently offered by AngloGold Ashanti for Geotechnical Engineering students allow students to acquire and demonstrate relevant graduate capabilities, with a digital badge credential (Fig. 5) available on completion. Prosple also hosts virtual career fairs and networking events, giving users the chance to connect with industry professionals and learn more about potential employers.

Supporting and advocating for tertiary institutions

According to Universities Australia, a decade of poor policy decisions and external economic pressures have placed unprecedented strain on the capacity of institutions to maintain a breadth of course offerings and research outputs[20].

As a consequence of this financial pressure, Australian universities have looked to restructure or amalgamate faculties, schools, programs and/or courses that have lower enrolment numbers and operate at higher costs. The resulting loss of academic and professional positions has been keenly felt by academia across the geosciences and smaller engineering disciplines such as mining and petroleum.

With only nine Australian universities currently offering Mining Engineering and fewer than half offering undergraduate or postgraduate geoscience courses,[21] the pipeline of professionals into critical occupations across the resources sector is increasingly tenuous. It was recently noted that:

> …at least seven of 21 geoscience departments across Australia have either been shut down or reorganised into more generalist earth science majors as part of science degrees… This arguably creates a graduate workforce that lacks the depth of knowledge and training required by industry – that is, a workforce that is not "work-ready".[22]

Recent course cancellations or reviews announced by the Universities of Wollongong and Tasmania, and by Federation University, provide examples of the pressure currently facing faculties providing specialist (and world-recognised) programs for the sector.

Most recently, industry has intervened to ensure the continuation of the BEng(Hons)(Mining) program at the University of Wollongong. To sustain the program in the short term, the NSW Minerals Council and its member companies provided support of $1.25 million over five years to enhance UOW's Mining Engineering program.

This funding will ensure the continuation of the existing bachelor's degree and support strategies aimed at increasing student enrolments, with the goal of achieving program self-sustainability by the end of the funding period. The additional resources will fund an academic position, scholarships, and outreach initiatives. This support is contingent upon UOW committing to maintain adequate resourcing to ensure program accreditation.

20 Universities Australia, 2024. Critical challenges for Australia's university sector: securing a sustainable future. Canberra.

21 Cohen, D.R., 2022. Australian Geoscience Tertiary Education Profile 2003 2021. Report to the Australian Geoscience Council.

22 Anant, R., 2025. Australia's critical minerals boom: Where will the workers come from? Australia's Paydirt.

Lifting tertiary attainment

To meet Australia's future skills challenge by increasing the available number of skilled workers, the recent Australian Universities Accord has recommended a tertiary attainment target (Certificate III or higher) of at least 80% of the workforce by 2050. To achieve this level of participation demands a wholesale redesign of existing access mechanisms and credentialling pathways. More people from traditionally underrepresented groups, including those from disadvantaged communities, from regional areas and from Aboriginal and Torres Strait Islander backgrounds need access tertiary study opportunities if the target is to be reached.

Current enrolment data for these under-represented equity groups has remained largely static since 2021, with constrained growth attributed to increasing costs of living particularly for students from regional and remote areas, due to the costs associated with relocating.[23]

UTAS Catalyst Program

The Catalyst Program is an example of an access-oriented, merit-based initiative at the University of Tasmania, supporting high-achieving STEM students through scholarships, research opportunities, and global learning experiences. It is designed to enhance academic and professional development, particularly in fields such as engineering, environmental science, and geospatial science.

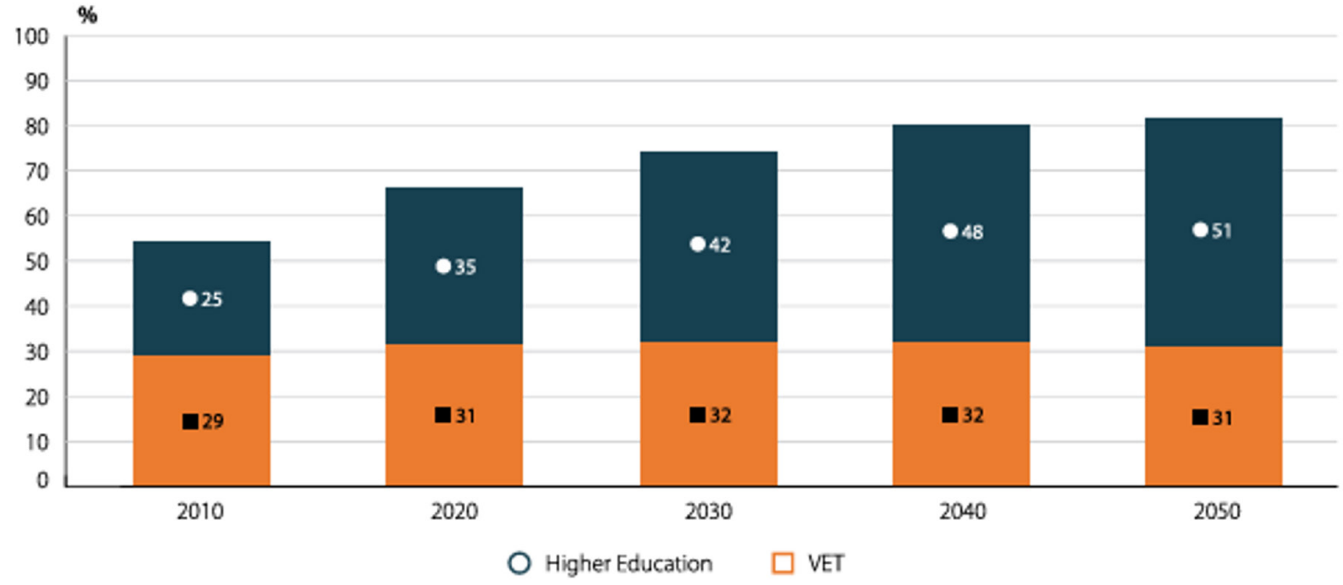
Students receive up to $14,500 in financial support, including a $3,000 base scholarship, for all students who have achieved an ATAR above 90, travel funding, and up to $9,000 for summer research. These experiences mitigate financial barriers, equipping students with practical skills, global awareness, and research capabilities that are directly applicable to the mining sector.

Pathway Diversity through 'Tertiary Harmonisation'

Delivering on the 80% attainment target outlined in the Australian Universities Accord will require an uplift of at least 33% from the 2023 share of Australian with a Certificate III or higher qualification. To achieve this, wider access to tertiary study for equity cohorts must be enabled through the creation of alternative pathways and redesigned qualification frameworks.

Australia's binary approach to tertiary education creates a narrow, and sometimes inaccessible pathway to professional qualifications. When universities hold the key to the academic qualifications and professional recognition, the pool of future talent is again constrained by access and equity limitations.

Figure 8: VET and higher education graduates share of all employed people (%), current figures and projected future demand, 2010 - 2050.



23 Australian Government, Department of Education, 2023. Selected Higher Education Statistics – 2023 Student Data. Canberra.

Jobs and Skills Australia has released its *Opportunity and Productivity: Towards a Tertiary Harmonisation Roadmap*[24] report which seeks to articulate the benefits of a more harmonised tertiary sector and provides recommendations for the creation of a sustainable pathway in collaboration with key stakeholders including industry. Tertiary harmonisation is not about merging or integrating VET and Higher Education. Each would remain a distinctive sector with important differences in their missions and their approaches to learning. Rather, it looks to improve access to tertiary education thereby growing the available pool of future talent, helping to address workforce shortages.

In theory, the Australian Qualifications Framework (AQF) currently allows for progression from vocational qualifications through to professional degrees via Diploma and Advanced Diploma articulation pathways. However, in the resources industry these qualifications are underutilised, with the focus remaining on dichotomous Apprenticeship (Cert III) or Degree (Bachelor) qualifications.

According to the Australian Mining and Automotive Skills Alliance (AUSMASA),[25] the introduction of vocational degrees at AQF Level 7 (equivalent to a bachelor's degree) has the potential to alleviate skills shortages by involving employers and industry associations in the design and development of technically focussed, occupation-specific professional qualifications. In the context of tertiary harmonisation, introducing vocational degrees and dual sector credentials, such as that offered by RMIT and AI Group (see below) requires that vocational and higher education providers share a common language and systems architecture across state and federal entities.

Appendix One: ANMEE Australian Graduate Mining Engineering Statistics Report - Access via link here

24 Jobs and Skills Australia Australian Government, 2025. Opportunity and Productivity: Towards a Tertiary Harmonisation Roadmap. Canberra.

25 Australian Mining and Automotive Skills Alliance, 2025. The Missing Middle – Considering the Potential of Vocational Degrees in the Mining and Automotive Sectors.