



# THE FUTURE OF MINING: Hot topics for 2026 & beyond

A closer look at the hot topics in mining, the industry skills gaps and the opportunities to elevate your career through AusIMM.



View professional learning opportunities at [ausimm.com](https://ausimm.com)

<b>Introduction</b>	<b>03</b>
<b>HOT TOPIC 1 - AI, Data Analytics, Automation and Innovation in Mining</b>	<b>05</b>
<b>HOT TOPIC 2 - Tailings, Waste and Holistic Orebody Management</b>	<b>06</b>
<b>HOT TOPIC 3 - Zero-entry, Electrified Mines and Safety of the Future</b>	<b>07</b>
<b>HOT TOPIC 4 - Critical Minerals and Evolving Reporting</b>	<b>08</b>
<b>HOT TOPIC 5 - Mine Closure and Stakeholder Expectations</b>	<b>09</b>
<b>HOT TOPIC 6 - Workforce Attraction and Leadership in Mining</b>	<b>10</b>
<b>AusIMM's 2026 Calendar</b>	<b>11</b>

**[View AusIMM's online  
professional development calendar](#)**



# Introduction

Mining is undergoing transformative changes driven by digital innovation, environmental demands, and evolving workforce needs. These shifts aim to enhance operational efficiency, safety, and sustainability while responding to the growing importance of critical minerals.

In this resource we explore six hot topics shaping mining in 2026 and highlight the skills industry requires. Discover the professional development available to upskill in these domains, that can also help position you as a mining leader

- **AI and Automation in Mining:** Advanced analytics, automation and AI are accelerating mining's digital era, creating opportunities for smarter, more efficient operations while requiring investment in infrastructure and new workforce skills.
- **Tailings, Waste and Orebody Management:** Increasingly complex and lower-grade deposits demand integrated life-of-mine planning and innovative approaches to waste and tailings management, with digital tools enabling more sustainable outcomes.
- **Zero-entry and Electrification:** Safer, zero-entry operations powered by electrified fleets and renewables are set to transform mine design, reducing emissions and human exposure to hazards.
- **Critical Minerals and Reporting:** Surging demand for critical minerals underpins the energy transition, requiring greater transparency, traceability and advanced reporting to meet market and stakeholder expectations.
- **Mine Closure and Stakeholder Engagement:** With thousands of mines facing closure, there is an urgent need for expertise in rehabilitation, land-use transitions and meaningful community partnerships.
- **Workforce and Leadership:** Attracting and retaining talent, while equipping leaders to manage technological change and diverse teams, is essential to sustain the industry's growth.

# About AusIMM

**AusIMM is the peak body for professionals working in the resources sector.**

**Representing a global community from 100 countries, we support professionals working across all disciplines and roles in mining. We offer world class technical conferences, online mining courses and an outstanding membership program to help advance careers.**

**AusIMM is the peak body and trusted voice for professionals working in the resources sector. We advance careers, inspire leadership, uphold standards and connect communities. Representing a global community from 100 countries, we are committed to supporting the careers of professionals working in the mining industry.**



## MINING HOT TOPIC 1

# AI, Data Analytics, Automation and Innovation in Mining

Advanced data analytics, remote operating centres and autonomous vehicles are pivotal to mining's digital transformation, which is expected to deliver operational, environmental and societal benefits. AI is expected to turbocharge progress. However, miners must overcome new challenges related to infrastructure compatibility, cybersecurity and workforce upskilling to capture the rewards on offer in the intelligent mining era.

Reskilling and upskilling people to leverage GenAI can also help ensure companies are best-prepared for future technological change. Combined with more stringent environmental and social governance (ESG) standards and license to operate demands, these companies have more than enough on their separate plates. High levels of collaboration and innovation have never been more important.

### Industry skills gap

Skills to interpret data, apply robotics/AI, and integrate digital systems into mining operations.

### Opportunities with AusIMM



- ✓ Conference: Change to Global Resources Innovation Expo (GRX)
- ✓ Course: Report Writing for Mining
- ✓ Course: Effective English Communication in Mining

**Adriatic Metals CEO Laura Tyler:** "Over the last decade, as computational power and efficiency have grown and storage costs have decreased, AI has leveraged that power to access, improve and use our data to gain efficiencies in the way we operate."

# Tailings, Waste and Holistic Orebody Management

Mining's orebody management load is only getting heavier, according to industry experts. Not just because of the industry's well-documented resource quality challenges, but also the rising energy, water and capital intensity of production flowsheets matched to these (average) lower grade, deeper and more complex mineral deposits.

In today's environment where mining companies must balance financial performance with stakeholder expectations to maintain a long-term license to operate, integrated, life-of-mine strategic planning and execution has become essential.

New tools and technologies, such as near real-time digital twins, are emerging to help operators capture and optimise a broader spectrum of value. Ultimately, the responsibility will fall to a new generation of industry professionals to lead the way forward.

### Industry skills gap

Knowledge of waste reduction, safe tailings management, and sustainable resource planning.

### Opportunities with AusIMM



- ✓ Conference: Mine Waste and Tailings
- ✓ Course: Tailings Management

**Kerry Turnock, Head of Geoscience Excellence, BHP:** "There is an expectation that we will model our waste and quantify our waste to the same level of granulation as we do with our economic component."

## MINING HOT TOPIC 3

# Zero-entry, Electrified Mines and Safety of the Future

Zero-entry mining is already providing safe access to otherwise unobtainable metals, according to companies such as copper giant Codelco. This approach has been seen to profoundly impact current capital intensity, operating costs and productivity benchmarks.

In an evolving regulatory landscape, superior zero-entry mining economics are opening up new opportunities to significantly reduce conventional mine infrastructure and workers exposure to hazardous surface and underground operating conditions.

When combined with battery-electric equipment and renewable energy, zero-emission, zero-entry mines could soon become a reality.

### Industry skills gap

Understanding electrification, safe mine design, and zero-harm culture.

### Opportunities with AusIMM



- ✓ Conference: Underground Operators
- ✓ Conference: Iron Ore | Open Pit Operators
- ✓ Conference: Mine Health and Safety
- ✓ Course: Mine Electrification

**Gavin Yeates, Global Mining Guidelines Group Project Co-lead and Principal, Gavin Yeates Consulting: "Zero entry mining is not just about automation; it's a complete transformation of how we approach mining."**

## MINING HOT TOPIC 4

# Critical Minerals and Evolving Reporting

Critical minerals underpin technologies such as electric vehicles, renewable energy systems, AI data centres and smart devices. Start demand for these materials could fundamentally reshape the global mining landscape over the next 15 years. The International Energy Agency has the combined market value for the world's copper, lithium, nickel, cobalt, graphite and rare earth elements output more than doubling to US\$770 billion in that time, under certain scenarios.

Construction of transparent, sustainable, and ethical supply chains means strengthening critical minerals provenance and traceability. This is presenting challenges given the complexity of some of these supply chains and the specialised and fast-moving markets for some minerals – for EV batteries, for example. At the resource modelling and project valuation end of the provenance line, estimates can require greater market and offtake contextualisation as well as by-product and co-product accounting and even pilot-scale mineral recovery factoring. It points to a future requiring significant expansion of relevant skills and competencies.

### Industry skills gap

Expertise in reporting standards, valuation, and critical minerals project assessment.

### Opportunities with AusIMM



- ✓ Conference: Critical Minerals
- ✓ Conference: Mill Operators
- ✓ Course: VALMIN Code Reporting
- ✓ Course: JORC Code Reporting
- ✓ Course: Cost Estimation
- ✓ Course: Metal Accounting

**Mike Cunningham, Principal Consultant, SRK Consulting: "For many critical minerals not all tonnes are equal. End users require specific purity, particle size or chemical composition. Resource estimates must consider quality parameters, not just grade-times-tonnes."**

## MINING HOT TOPIC 5

# Mine Closure and Stakeholder Expectations

Mining's environmental, ethical, and reputational responsibilities have remained consistent, despite shifting public and investor focus on "ESG" over the past five years. The industry has long recognised the value of efficiency, safety, resource optimisation and innovation and improvement in these areas is only becoming more critical as mining's complexity and cost pressures grow at the same time as society's expectations around resource governance mount.

With an estimated 240 mines due to close by 2040 in Australia alone, and the country's annual mine restoration spend forecast to rise above A\$4 billion, demand for mine closure and rehabilitation expertise is set to surge over the next decade. As many as 2200 active mines also have closure plans while unrehabilitated legacy sites could number in the tens of thousands. Australia, as much as any other mature mining jurisdiction worldwide, has the spotlight well and truly on mine waste reduction and recovery, land-use transitions, land reclamation and effective engagement, co-design and partnership arrangements between miners and communities that can lead to better and more mutually beneficial closure outcomes.

### Industry skills gap

Skills in integrated mine closure, environmental management, and community engagement (including First Nations).

### Opportunities with AusIMM



- ✓ Conference: Life of Mine Conference
- ✓ Course: Integrated Mine Closure
- ✓ Course: ESG and Social Responsibility

**Mark Cutifani, former CEO of Anglo American/AngloGold Ashanti: "In my experience across the globe, if the local community supports a project, 9 times out of 10 it will be developed."**

## MINING HOT TOPIC 6

# Workforce Attraction and Leadership in Mining

Mining's management and work landscape has never been more complex. The Industry leaders recognise they must take "soft skills" and organisational culture as seriously as they take financial and production imperatives. That means investing in professionals who shape culture at corporate and site level, not just the C-suite, and in building pathways for diverse talent and creating workplaces where people want to stay.

Traditional pipelines of mining talent are no longer sufficient to meet demand in many parts of the world, according to industry recruitment experts. Mining companies are looking beyond the sector to recruit people with transferable skills from other industries such as oil and gas.

Technology is modifying and removing mining roles, increasing pressure on professionals to learn skills that can't be easily automated. Technology is giving the mining industry an opportunity to reshape its public image, showing its a dynamic sector embracing software, sensors, robotics, and AI as well as a critical enabler of the global energy transition, electrification, and the age of generative AI.

### Industry skills gap

Career development pathways, leadership skills, and strategies for attracting and retaining diverse talent.

### Opportunities with AusIMM



- ✓ Course: Leadership for Managers in Mining
- ✓ Event: Thought Leadership Series
- ✓ Membership
- ✓ Mentoring Program

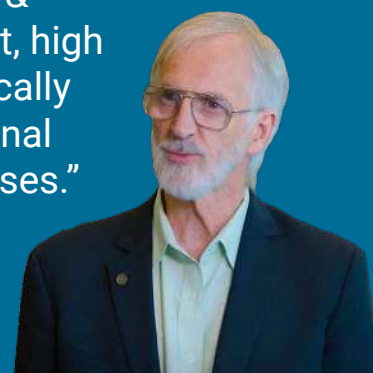
**Natascha Viljoen, CEO-elect, Newmont Corporation** "As we navigate today's complex mining landscape, from cost pressures to evolving stakeholder expectations, we will need to be disciplined, innovative and more focused than ever before, while maintaining our safety and sustainability standards."

“I loved the flexibility and the structure of the courses and the ability to customise my learning experience.”



**ANA CHIQUINI**  
Principal Resource Estimation,  
Rio Tinto

“AusIMM prepares & produces excellent, high quality and technically focused professional development courses.”



**MARK BERRY**  
Geology and Mining Consultant,  
Derisk Geomining Consultants

## 2026 Online Courses Calendar

JANUARY	
FEBRUARY	
<b>JORC Code Reporting</b> PROFESSIONAL CERTIFICATE 16 FEBRUARY	≡ 40
<b>Leadership for Managers in Mining</b> ASSOCIATE CERTIFICATE 23 FEBRUARY	≡ 20
MARCH	
<b>Cost Estimation for the Resources Industry</b> ASSOCIATE CERTIFICATE 2 MARCH	≡ 20
<b>Metal Accounting</b> PROFESSIONAL CERTIFICATE 9 MARCH	≡ 40
<b>Report Writing for Mining</b> ASSOCIATE CERTIFICATE 16 MARCH	≡ 20
<b>Integrated Mine Closure</b> PROFESSIONAL CERTIFICATE 30 MARCH	≡ 40
APRIL	
<b>Mine Electrification</b> ASSOCIATE CERTIFICATE 6 APRIL	≡ 20
<b>Tailings Management</b> PROFESSIONAL CERTIFICATE 8 APRIL	≡ 40
<b>Study Processes for Resource Projects</b> ASSOCIATE CERTIFICATE 27 APRIL	≡ 20
MAY	
<b>Tailings Management (Spanish)</b> PROFESSIONAL CERTIFICATE 6 MAY	≡ 40
JUNE	
<b>JORC Code Reporting</b> PROFESSIONAL CERTIFICATE 1 JUNE	≡ 40
<b>The Mining System</b> ASSOCIATE CERTIFICATE 8 JUNE	≡ 20
<b>Business Optimisation for Mining</b> ASSOCIATE CERTIFICATE 15 JUNE	≡ 20
<b>VALMIN Code Reporting</b> ASSOCIATE CERTIFICATE 29 JUNE	≡ 20
JULY	
AUGUST	
<b>Leadership for Managers in Mining</b> ASSOCIATE CERTIFICATE 3 AUGUST	≡ 20
<b>ESG and Social Responsibility</b> PROFESSIONAL CERTIFICATE 10 AUGUST	≡ 40
<b>Cost Estimation for the Resources Industry</b> ASSOCIATE CERTIFICATE 17 AUGUST	≡ 20

“Very experienced facilitators and a user-friendly platform, easy to understand & manage your time.”



**METIN YURDAKUL**  
Senior Resource Geologist,  
Glencore

“With AusIMM, you know it’s going to be a good course, and you are not going to waste your time or money.”



**CECILIA ARTICA**  
Principal Geologist, Geometallurgy  
and Mineral Resources (Group)  
First Quantum Minerals

**KEY:** 🏠 00 PD HOURS    📘 PROFESSIONAL CERTIFICATE    📄 ASSOCIATE CERTIFICATE    🟢 SELF-PACED

SEPTEMBER	
<b>Metal Accounting</b> PROFESSIONAL CERTIFICATE 7 SEPTEMBER	🏠 40
<b>Tailings Management</b> PROFESSIONAL CERTIFICATE 9 SEPTEMBER	🏠 40
<b>Report Writing for Mining</b> ASSOCIATE CERTIFICATE 28 SEPTEMBER	📄 20
<b>Tailings Management (Spanish)</b> PROFESSIONAL CERTIFICATE 30 SEPTEMBER	🏠 40
OCTOBER	
<b>JORC Code Reporting</b> PROFESSIONAL CERTIFICATE 5 OCTOBER	🏠 40
<b>Integrated Mine Closure</b> PROFESSIONAL CERTIFICATE 12 OCTOBER	🏠 40
NOVEMBER	
<b>Mine Electrification</b> ASSOCIATE CERTIFICATE 2 NOVEMBER	📄 20
<b>Study Processes for Resource Projects</b> ASSOCIATE CERTIFICATE 2 NOVEMBER	📄 20
<b>Business Optimisation for Mining</b> ASSOCIATE CERTIFICATE 9 NOVEMBER	📄 20

SELF-PACED COURSES (YEAR ROUND)	
<b>Breaking the Surface: AN INTRODUCTION TO THE RESOURCES SECTOR</b>	
<b>Integrated Mine Closure: AN INTRODUCTION TO INTEGRATED MINE CLOSURE</b>	
<b>Establishing a New Minerals Consultancy</b> MINERAL CONSULTANTS FUNDAMENTALS 1	🏠 5
<b>Planning Your Consultancy Business</b> MINERAL CONSULTANTS FUNDAMENTALS 2	🏠 5
<b>Effective Client Relationships</b> MINERAL CONSULTANTS FUNDAMENTALS 3	🏠 5
<b>Delivering to Client Expectations</b> MINERAL CONSULTANTS FUNDAMENTALS 4	🏠 5
<b>Managing Risk as a Consultant</b> MINERAL CONSULTANTS FUNDAMENTALS 5	🏠 5

### GROUP BOOKINGS

Enhance your team’s technical skills and **SAVE 10%** or more for group bookings of 3 and more in the same course. The following courses are also available exclusively for groups:

- Breaking the Surface- An Introduction to Mining
- Diversity and Inclusion Masterclasses
- Introduction to Integrated Mine Closure

Click [here](#) to enquire now for group bookings

# Author



**Richard Roberts**  
Editor In Chief  
InvestMETS

Richard Roberts is an experienced mining journalist and editor with over 30 years reporting on the global resources industry. He has led editorial teams across leading mining publications and worked closely with industry leaders to analyse trends, innovations and challenges shaping the sector.

Richard specialises in providing clear, insightful commentary on mining technology, operations and workforce transformation, and is passionate about highlighting the role of professional development in driving the industry forward.

To find out more about AusIMM, visit [ausimm.com](https://ausimm.com)