MANDELA MINING PRECINCT
MINDS FOR MINES

Mining Minds

Twelfth Edition April 2026

MMP RTIMS Programme Manager reflects on an

eye-opening goldfields south deep mine visit

By: **Marius Auret**, RTIMS Programme Manager

Following our recent trip to China to explore cutting edge technologies, one of our TSC members, George Nell from Goldfields, challenged us, stating *"Our local mines are more on par than you think – come and see for yourselves."* He was absolutely right.

TO **READ MORE** GO TO **PAGE 3**

Building a skills-first organisation:

Insights from PwC research

On 26 February 2026, the MMP Successful Application of Technologies Centred Around People programme hosted a webinar titled *"How to Build a Skills-First Approach in Organisations."* The session featured insights from PwC representatives, based on their research into evolving workforce models.

Drawing on their findings, PwC highlighted the growing limitations of traditional job-based organisational structures in today's fast-changing, technology-driven environment. Rigid job descriptions and hierarchical models are increasingly unable to respond to technological disruption, talent shortages, and shifting market demands.

Their research points to a shift towards a skills-based organisation (SBO) as a more future-focused approach. By prioritising skills over formal roles, organisations can become more agile, inclusive, and innovative. In the mining sector, this approach has the potential to improve health and safety outcomes, strengthen productivity, enhance talent retention, and better respond to rapid technological change.

CLICK TO WATCH THE **WEBINAR**

https://youtu.be/HIUkxK08q_I

CLICK HERE TO **READ MORE**

https://mandelaminingprecinct.org.za/building-a-skills-first-organisation-insights-from-pwc-research/

Read all about it...

FROM THE **EXECUTIVE DIRECTOR**

The fundamental right of every individual to a safe and healthy workplace

In a month when South Africa marked Human Rights Day, my thoughts turned to the fundamental right of every individual to a safe and healthy workplace. This right is enshrined in our Constitution and reinforced through the legislation that gives effect to it.

Safety and health are not abstract concepts – they impact people's lives daily. Safety and health in mining, as well as maintaining environmental integrity, underpins all the work that we do at the Mandela Mining Precinct. All our research, development and innovation has at its core, the safety and wellbeing of people.

We also care tremendously about providing opportunities for people to develop, and are proud to share that one of our interns, Ms Kamogelo Baloyi, graduated with a Masters degree. Looking broader, we delivered a webinar on *How to Build a Skills-First Approach in Organisations*; skills development in modernising mining – from the face to the Boardroom – is one of the foundational drivers of future success in the sector.

This past quarter has seen significant technical breakthroughs, all of which contribute to improved safety, health, and productivity in mining. A Capability Roadmap was delivered that describes how real time information management systems are likely to evolve, directing our work with precision to deliver digital value for the future. Another project linked to this is the advanced face-level intelligence through digitising

underground operations. Phase 5 of the Rock Engineering Pillar Design further developed numerical modelling using case studies to determine pillar strength in multi-reef situations.

Reflecting on how far the industry has come, I'm reminded that, at least seven decades ago, my father worked in the mines and spoke about how miners would "listen to the rocks talking" to detect risk. Today, that instinct has been transformed through technology.

Our team has also been out in the 'real world', visiting mine sites, taking part in webinars, and of course, participating in the biggest mining indaba ever, under the banner of our primary funder, the Department of Science, Technology and Innovation (DSTI).

Enough of looking back – 2026 holds much promise for our work for the sector. We are delighted to be hosting our second Showcase Event on 2 & 3 Nov 2026, following the overwhelming success of the 2024 Showcase Day. Modernising our engagement with people is also important to us, and our new website aims to be more accessible to all stakeholders, while delivering better and more relevant information, quicker.

In our strategic journey to 2030, 2026 is the year of "Implement Changes". I invite you to keep track of us on our socials, through our website and KnowMore Portal, to see the impact of these changes. I know that the wider we spread the results of our work, and the more feedback we receive, the more impact our RDI will have on making mining safer, healthier, more efficient, and contribute to growing a future where people, the environment, and the economy thrive, together.

Take care of yourselves, and of each other.

Julie Courtnage
MMP Executive Director

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MMP RTIMS Programme Manager reflects on an

eye-opening goldfields south deep mine visit

On 19 February 2026, an MMP delegation, together with a representative from Sibanye-Stillwater, visited the Goldfields Control and Instrumentation (C&I) operations at South Deep Mine.

A Masterclass in Technological Maturity

The Control and Instrumentation (C&I) team delivered what can only be described as a masterclass in modern mining. We were given a sneak peek of their **Mine Orchestrator** – the digital "brain" managing the entire operations – alongside their strategic technology roadmap and vendor ecosystems.

What struck me most was not just the sophistication of their technology, but their **openness**. They shared their implementation strategies and successes with transparency that is rare and refreshing. It is now crystal clear why George was so adamant we visit - South Deep is world-class.

CLICK HERE TO **READ MORE**

https://mandelaminingprecinct.org.za/mmp-rtims-programme-manager-reflects-on-an-eye-opening-goldfields-south-deep-mine-visit/

ACCELERATING MINING INNOVATION:

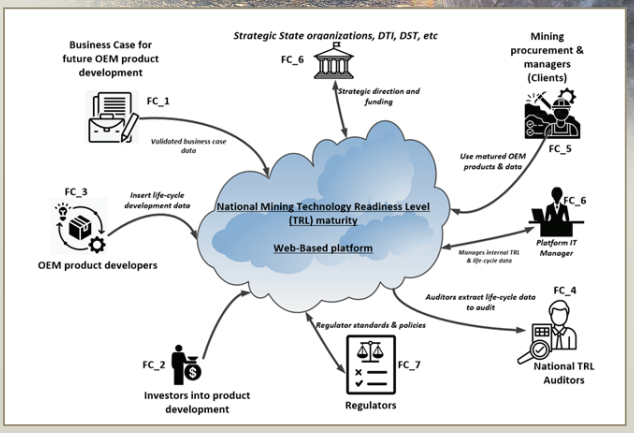
A PLATFORM FOR TECHNOLOGY READINESS AND ADOPTION

The MMP Longevity of Current Mines (LoCM) Programme continues to make meaningful progress in supporting the development and commercialisation of mining technologies.

A key milestone is the establishment of a Proof of Concept (PoC) for the National Mining Technology Readiness Level (NMRL) information-sharing platform. This initiative aims to improve how new mining technologies are developed and adopted by providing a clear, structured, and transparent pathway for tracking the maturity of technologies developed by Original Equipment Manufacturers (OEMs).

At the centre of this effort is a web-based platform that makes it easier to track, assess, and share information on the readiness of mining technologies across South Africa.

The NMRL platform enables OEM developers and national technology readiness auditors to formally assess and certify the maturity of new technologies. In doing so, it creates a shared "language" that helps stakeholders understand which technologies are ready for deployment, which are still in development, and which show the greatest potential. This clarity supports better decision-making by mining companies and investors, reducing delays and minimising costly investment risks. It also helps bridge the "Valley of Death"—the stage where promising innovations often fail to reach operational use due to limited visibility, funding, or integration guidance.



CLICK HERE TO **READ MORE**

https://mandelaminingprecinct.org.za/accelerating-mining-innovation-a-platform-for-technology-readiness-and-adoption/

Smarter pillar design for safer multi-reef mining: Case studies

The MMP Mechanised Mining Systems Programme is advancing safer and more efficient multi-reef mining using advanced numerical modelling for pillar design.

This approach provides critical insight into how stress develops within rock formations, enabling more informed extraction planning that protects workers and optimises performance in complex, multi-reef environments.

The study analysed three real-world mining scenarios to better understand how stress behaves under different conditions.

The first case looked at mining the Upper Group 2 (UG2) reef beneath previously mined Merensky Reef stopes. Decades of Merensky extraction left irregular rock remnants, creating unpredictable high-stress zones in the underlying UG2 pillars. Standard pillar design methods cannot account for these variations, increasing the risk of pillar failure or rock bursts.

Numerical simulations helped identify these high-stress areas, highlighting where additional support or modified layouts may be needed.

CLICK HERE TO **READ MORE**

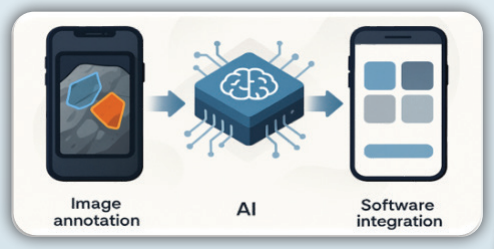
https://mandelaminingprecinct.org.za/smarter-pillar-design-for-safer-multi-reef-mining-case-studies/

DIGITISING THE UNDERGROUND: **ADVANCING FACE-LEVEL INTELLIGENCE**

The MMP Advanced Orebody Knowledge (AOK) Programme is making steady progress in developing a digital tool that will transform how underground data is captured, making it faster, more consistent, and easier to use.

By enabling structured data collection directly at the mining face, the tool will support safer operations and more informed decision-making.

The current phase of development has demonstrated encouraging performance in sedimentary underground environments, where the application has shown strong capability in identifying rock types, including conglomerates which may contain gold. Early testing of



the image marking process is working well, although further improvements are being made to better interpret geological structures and ensure consistent results across different ground conditions.

CLICK HERE TO **READ MORE**

https://mandelaminingprecinct.org.za/digitising-the-underground-advancing-face-level-intelligence/

Highlights from Investing in Mining Indaba 2026

The MMP participated in the *Investing in African Mining Indaba 2026*, held from 9–13 February 2026 at the Cape Town International Convention Centre, under the Department of Science, Technology and Innovation (DSTI) Emerging Technologies exhibition stand.

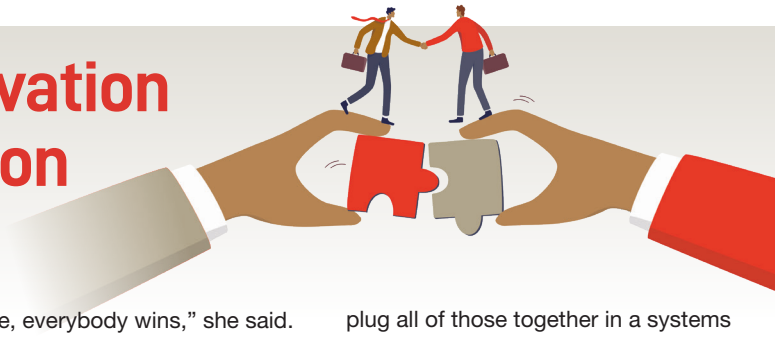
The event provided a valuable platform to showcase MMP's 2030 strategy and its role in advancing a modernised mining sector. Through active participation in panel discussions and engagements, MMP demonstrated thought leadership while strengthening its position as a key connector between research, industry, and policy.

The DSTI, in partnership with its entities, continues to drive innovation to shape the future of South African mining, supporting a sector that is more competitive, safe, and sustainable through technology, collaboration, and investment.

As part of the programme, **MMP exhibited alongside other DSTI entities**, while the **MMP Executive Director** contributed to a **number of discussions** focused on the **future of mining**.

CLICK HERE **FOR HIGHLIGHTS** AND **KEY TAKEAWAYS:** https://mandelaminingprecinct.org.za/highlights-from-investing-in-mining-indaba-2026/

Driving mining innovation through collaboration



MMP Executive Director, Julie Courtnage, recently participated in a Creamer Media webinar titled *"Efficiency Gains: Mining Machinery and Know-How at the Cutting Edge."*

During the session, she highlighted the critical role of collaboration in the development and deployment of new mining technologies, emphasising that innovation depends on the effective flow of information across the industry.

"Collaboration makes you solve problems quicker. It helps you see risks that you might not perceive if only one person is working on it. It shares information so that there's less duplication and it's much more cost efficient. And with everybody having skin in the game, everybody wins," she said.

Julie also underscored the importance of technologies such as mechanisation, automation, and digitisation including digital twinning, artificial intelligence, and machine learning in improving both safety and productivity in mining operations.

She noted that mining operates as a complex, interconnected system, where the integration of multiple technologies is key to unlocking full value.

"Because mining is a system of systems, if you have any single one in isolation from the others, to be frank, it won't operate to deliver the value that it can when we plug all of those together in a systems model," she explained.

Looking ahead, Julie emphasised the importance of a people-centred approach to innovation, that prioritises health, safety, and the role of the workforce in driving sustainable change within the sector.

CLICK HERE TO **READ THE REPORT** ABOUT THE WEBINAR

https://mandelaminingprecinct.org.za/driving-mining-innovation-through-collaboration/

Celebrating an Academic Milestone!

Kamogelo Baloyi, an AOK intern, graduated with a Master of Science (MSc) in Geophysics from University of the Witwatersrand in December 2025. Her research focused on using open-source Interferometric Synthetic Aperture Radar (InSAR), a freely available satellite technology that tracks changes in the Earth's surface over time. By comparing images taken at different points in time, this method can detect ground movement or deformation. Kamogelo applied this approach to monitor tailings storage facilities, which are sites where mining waste is stored, helping to identify potential structural risks early.

The study investigated whether freely available satellite radar data could detect ground deformation patterns associated with tailings dam instability. The research was conducted as a case study of the Jagersfontein tailings dam failure, analysing satellite data spanning approximately one year prior to the collapse. The results demonstrate the potential of open-source InSAR as a cost-effective, remote monitoring tool that can complement onsite inspections and conventional instrumentation, particularly for identifying precursory deformation trends.

"This work highlights the growing role of satellite-based geophysical methods in improving tailings dam risk management, transparency, and early-warning capabilities within the mining industry," she says.

CLICK HERE TO **READ MORE**

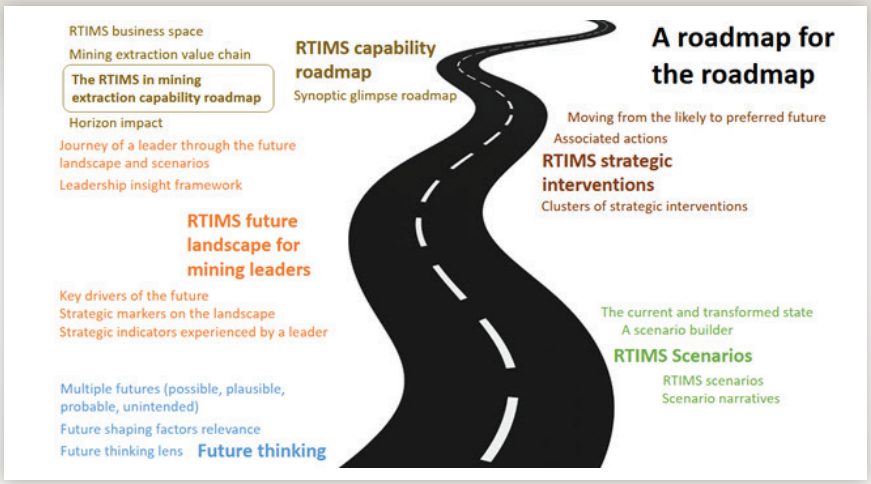
https://mandelaminingprecinct.org.za/celebrating-an-academic-milestone/

MMP IN THE MEDIA

- **Mining Review Africa** – https://www.miningreview.com/magazine-article/mmp-creating-a-research-collaboration-hub-for-underground-safety/
- **Engineering News** – https://www.youtube.com/watch?v=XdSUGvRzxpQ
- **Mining Weekly** – https://www.miningweekly.com/article/dsti-discusses-the-importance-of-partnerships-collaboration-in-driving-progress-in-mining-2026-02-11

Shaping the Future of Mining:

The RTIMS Capability Roadmap



The Mandela Mining Precinct (MMP), through its Real-Time Information Management Systems (RTIMS) programme, has taken a significant step toward contributing to a more resilient, innovative, and globally competitive mining sector in South Africa.

In response to rapid changes across the industry including the rise of automation, artificial intelligence, and digital technologies, as well as increasing pressure for sustainable and ethical mining practices, the MMP has developed a comprehensive RTIMS capability roadmap. This roadmap provides a clear, forward-looking plan to guide the mining sector over the next 5 to 10 years.

CLICK HERE TO **READ MORE**

https://mandelaminingprecinct.org.za/shaping-the-future-of-mining-the-rtims-capability-roadmap/