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ON THE COVER

The mining sector remains the backbone of the South African economy, with key commodities driving significant economic opportunity.

COMMENT

Caught between a rock and a hard place

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In April the effect of the US-Isreal-Iran war become decidedly tangible - the double blow of soaring oil and steep electricity prices sees South African's face higher prices all round. If the conflict does not subside soon, even greater economic strain and hardship are likely—not only for the countries directly involved, but globally.

There is, however, a measure of relief: for now, Iran has granted South African cargo ships and oil tankers safe passage through the Strait of Hormuz.

The middle eastern country has selectively allowed vessels from friendly countries to transit the strait, while restricting access for US- and Israel-linked ships amid ongoing regional tensions.

Importantly, the conflict is forcing global shipping to reroute around the Cape of Good Hope, creating a surge in maritime traffic near South African ports. Shipping operators, including giants like MSC, Maersk, and Hapag-Lloyd, are bypassing the Suez Canal and the Red Sea due to safety risks, rerouting ships around the South African coast. Ports such as Cape Town and Durban are seeing higher volumes of traffic as ships avoid the Persian Gulf.

Given that the crisis could lead to a lasting change in international trade routes, are South Africa's Ports ready for the increased traffic?

Unfortunately, not – inefficiencies at the ports risk South Africa missing out on significant bunkering and repair income.

Although Transnet has done much recently to improve the ports, reports indicate that increased container processing capacity is sorely needed.

Transnet plans to invest over R127 billion to modernise its national rail and port infrastructure, with roughly R2.7 billion specifically earmarked for port upgrades in the current year. The investment aims to boost container terminal efficiency, particularly in Durban and Cape Town.

The state-owned entity is currently undergoing a "Reinvent for Growth" strategy to modernise infrastructure, improve efficiency, and tackle backlogs, driven by high demand for commodities like coal, iron ore, and manganese. Key focus areas include rebuilding rail capacity for coal and manganese, implementing structural reforms with private sector participation, and modernising port infrastructure.

In January this year, Transnet SOC signed a strategic MoU with Port of Antwerp-Bruges International and the Antwerp/Flanders Port Training Center to modernise South Africa's port system, enhance operational efficiency, and strengthen regional trade competitiveness.

Also of note, commissioner of SARS, Edward Kieswetter ended his term with a historic milestone for the 2025/2026 financial year – collecting over R2.01 trillion in net revenue, an 8.4% increase from the previous year. This total exceeded projections by R24.7 billion. The revenue is earmarked to fund government expenditure, support public services, and service national debt, while also contributing directly to social programmes, education, healthcare, and infrastructure development.

Yet, despite this strong revenue performance, the country's infrastructure continues to deteriorate. Roads, in particular, have become a visible symbol of decline, with potholes in some areas growing to massive proportions—highlighted recently when Helen Zille drew attention to the issue by swimming in a large pothole in a Johannesburg neighbourhood.

Dr. Johnstone Makhubu replaces Kieswetter as the new Commissioner for a period of five years.

“The middle eastern country has selectively allowed vessels from friendly countries to transit the strait, while restricting access for US- and Israel-linked ships amid ongoing regional tensions.”

In this edition

The outlook for key commodities such as copper (pg 8) and gold (pg 10) is looking rosy, with rising commodity prices creating a huge economic opportunity for the country. According to Econometrix Chief Economist, Dr Azar Jammine, a keynote speaker at the AfriSam's annual Budget Breakfast event held in Sandton, the “estimated R350 billion inflows could stimulate investment in mining and infrastructure” (pg 7).

Also of interest are the latest developments at Kazeera Global, which is transitioning from a project developer into a profitable mining company (pg 14), and Fulcrum Metals, which is capitalising on the current “golden era” (pg 16). Meanwhile, Redpath Mining—bringing over 60 years of global mining service excellence—and its subsidiary, Redpath Africa, with 32 years of experience on the continent, continue to advance their growth trajectory (pg 20).

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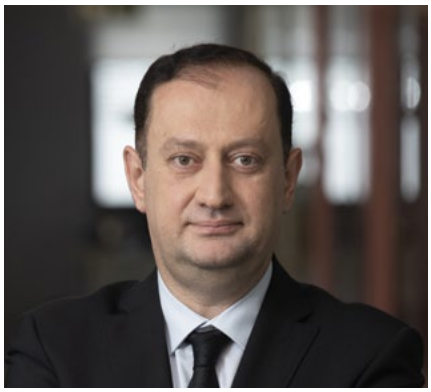
Final Investment Decision approval for Doropo Gold Project

LSE-listed Resolute Mining, the Africa-focused gold miner, has formally approved the Final Investment Decision (FID) for its Doropo Gold Project in Côte d'Ivoire, marking a transformational step towards construction and production. Reaching a positive FID on Doropo advances Resolute's goal of becoming a leading multi-asset gold producer in West Africa. This milestone underpins the company's strategy to grow annual gold production above 500 koz by the end of 2028 and validates the company's commitment to disciplined growth and generating shareholder value. The decision follows the completion of extensive technical, economic, environmental, and social evaluations, as well as receipt of the mining permit from the Council of Ministers in Côte d'Ivoire, confirming the project's robust economics, technical viability, and alignment with the company's long-term growth strategy. The project is expected to become a cornerstone asset within the company's development pipeline, with construction due to commence in H1 2026. The development of Doropo supports production over an initial mine life of approximately 13 years, with potential opportunities for expansion and value creation throughout the region. ■

Resolute Mining has approved the FID for its Doropo Gold Project in Côte d'Ivoire.

Menar becomes a United Nations Global Compact member

Menar becomes a United Nations Global Compact member.



Menar's Managing Director, Vuslat Bayoglu.

As part of its sustainability advocacy, Menar has joined the United Nations (UN) Global Compact initiative, becoming one of over 20 000 companies globally with a shared vision for a better world. As a company involved in critical industries such as mining, minerals processing and logistics, Menar intends to use its membership as a platform to advocate for sustainable practices across all its operations. The UN Global Compact is an initiative that encourages companies to make a positive impact through aligning their strategies and operations with the ten universally accepted principles relating to human rights, labour, environment, anti-corruption, and to act in support of Sustainable Development Goals (SDGs). As a member, Menar will submit a mandatory Communication on Progress (CoP) report demonstrating its commitment to the UN Global Compact's Ten Principles. "Our commitment to the UN Global Compact and the Ten Principles is an important part of our journey to promote good stewardship and ethical business practices because we believe in building sustainable economies," Menar's Managing Director, Vuslat Bayoglu, concludes. ■

$28.8 million strategic placement backed by Perseus Mining

ASX-listed Aurum Resources has received firm commitments for a placement of 48 million shares at A$0.60 per share to raise A$28,8 million, including a cornerstone investment by African-focused gold producer Perseus Mining. Post completion, the company will have cash on hand of more than A$60 million, providing it with the financial strength to execute its dual-project growth strategy in Côte d'Ivoire. Aurum's Managing Director Dr. Caigen Wang said: "Perseus Mining's decision to cornerstone this placement is a powerful endorsement of the quality of Aurum's asset base and our project development trajectory. With more than A$60M of cash on hand post-raise, Aurum is funded to execute on our 2026 drilling campaign of 130 000m across Boundiali and Napié, deliver the Boundiali Feasibility Study, and continue growing our resource inventory." ■

High-grade feed secured and Large Waste Rock update

Jubilee, the Zambia copper focused producer, has secured additional high-grade copper feed material for the Roan concentrator and provides an update on its Large Waste Project. Leon Coetzer, CEO of Jubilee, commented: “The Large Waste Rock Project continues to progress towards the conclusion of a joint venture, with two potential partners shortlisted for the project to upgrade the copper stockpile and refine the recovered material into copper. Jubilee continues to work with its ore partner at Roan who continues to supply ore of a consistent quality grading approximately 1.65% Cu, with the higher grade supporting improved recoveries and enhanced profitability. Roan’s performance is further strengthened by the near completion of the concentrate dewatering system, which is expected to be commissioned by the end of March 2026.” ■

Jubilee Metals secures high grade feed material for its Roan project.

Pan African to acquire Emmerson Resources

JSE-listed Pan African Resources has entered a binding Scheme Implementation Deed (SID) with Emmerson Resources whereby Pan African will acquire 100% of the shares in Emmerson. Pan African will seek to list on the Australian Securities Exchange (ASX) by way of a foreign exempt listing, providing Emmerson shareholders with the ability to trade Pan African CDIs on the ASX. Pan African’s shares will continue to trade, as a dual primary issuer, on the London Stock Exchange and Johannesburg Stock Exchange following the proposed ASX listing. ■

Theta Gold locks in key crushing **and screening plant contract**

ASX-listed Theta Gold Mines has announced a significant milestone at its flagship TGME Gold Project in South Africa, executing a manufacturing contract for a crushing and screening plant with NMS Africa, a critical step toward first gold and early cashflows.

The contract covers the manufacture of a three-stage crushing and screening plant designed to meet initial production requirements, while allowing for future expansion as the project scales. The plant includes ore feed, primary, secondary and tertiary crushing, plus screening circuits. With a 125-day delivery lead time, this long-lead item is now locked in, further reducing execution risk and keeping the TGME Gold Project on track for commissioning in Q4 2026. Comments by Theta Gold Chairman, Bill Guy: “The company is excited to have signed the supply contract with NMS South Africa to supply a critical part of the long-lead item of equipment for the TGME Gold Mine Project. MNS South Africa is based in Johannesburg, four hours via road to TGME Gold Project.” ■

Sasol launches Destoning Plant to improve coal quality


Sasol recently opened its new Destoning Plant.

Sasol recently opened its new Destoning Plant, marking a significant milestone in efforts to enhance coal quality and drive improved operational performance. The plant, which achieved beneficial operation in December 2025, forms part of Sasol's broader plan to strengthen, grow, and transform the business. Developed through the conversion of the Twistdraai Export Plant, the facility removes high-density stone from the run-of-mine coal sourced from the Thubelisha and Bosjesspruit mines. By reducing ash and sinks before coal enters the gasification process, the plant helps improve syngas quality for Sasol's synthetic fuels and chemicals value chain. Since commissioning, the plant has contributed to a reduction in average sinks for Q1 FY26 to below 14%, supporting improved coal quality availability to Secunda Operations and helping to lift overall production for the quarter. "This facility is a key commitment we made at Capital Markets Day in 2025, and it plays an important role in enhancing operational performance at Secunda Operations by enabling the processing of higherquality, destoned coal," said Simon Baloyi, Sasol CEO. ■

Afrisam budget breakfast **highlights economic upside from commodity price surge**

Rising prices for key commodities such as gold and platinum are creating a significant economic opportunity for South Africa, with an estimated R350 billion inflow that could stimulate investment in mining and infrastructure. This potential upswing could also benefit the construction sector and companies such as AfriSam, which is well positioned to support future infrastructure development with cement, aggregates and readymix solutions.

The strong rally in commodities such as gold, platinum, rhodium and palladium is creating significant windfall opportunities for South Africa to support its economic turnaround.

Speaking at AfriSam's annual Budget Breakfast event in Sandton recently, Econometrix Chief Economist Dr Azar Jammine said the exceptional surge in commodity prices could have an "absolutely enormous" impact on the South African economy.

Dr Jammine pointed to an estimated inflow of about R350 billion into the country from commodity sales, arriving just as the economy began showing signs of recovery toward the end of last year. This follows a prolonged period during which South Africa lagged global growth levels, resulting in a decline in living standards of between 6% and 7% over the past eight years.

He noted that the key opportunity now lies in government directing this windfall toward higher levels of fixed capital formation through targeted investment in infrastructure, thereby creating an environment in which business can thrive.

"If this can be converted into real investment in new exploration and development in the mining sector, the knock-on effects through the rest of the economy could be unbelievable," he argued.

Dr Jammine highlighted that the third quarter of 2025 saw a modest uptick in fixed investment of 1.1% - the first positive movement in two and a half years. The Medium-Term Budget Policy Statement released in November 2025 also indicated that the Government of National Unity was beginning to produce "some positive results," particularly through its commitment to fiscal discipline.

Higher commodity inflows have also contributed to a stronger rand against the US dollar, helping to reduce inflation to around 3.5%. This supports government's lower inflation target of 3% and has helped shift inflation expectations downward.

"This has meant that long-term interest rates have declined, resulting in considerable savings for government in terms of interest payments on its debt," Dr Jammine said.

Improving economic prospects have also been recognised internationally, with ratings agency S&P Global upgrading South Africa's credit rating for the first time in 16 years. ■

Econometrix Chief Economist Dr Azar Jammine speaking at AfriSam's annual Budget Breakfast event.

Reliable infrastructure starts with quality construction materials.

How copper is enabling the future of electrification and AI

Copper has historically supported various manufacturing sectors, but its importance is now evolving in line with a new era of industrial development. From electric vehicles (EVs) and renewable energy systems to AI infrastructure and defence technologies, copper's physical properties make it essential to a wide range of modern applications. As a result, demand for the metal is growing rapidly, and copper is increasingly recognised as essential to both the short and long-term growth of these industries.

Examining mineralisation at Talisman's Fougnar Copper-Silver Project, Morocco.

With the global shift towards electrification gaining pace, the rapid scaling of AI and advanced technologies is emerging as a major driver of copper demand. EVs are a key example, requiring 83 kg of copper per battery – significantly more than the 23 kg needed in a conventional internal combustion engine, according to the International Copper Association. Used in motors, wiring, charging infrastructure, and battery systems, copper's high thermal conductivity makes it essential in managing the heat generated within EV batteries and motors. Its ability to allow efficient power transfer within these systems minimises energy loss and improves overall efficiency, making it cost-effective as well as essential to proper functioning. With the International Energy Agency reporting that global EV sales increased by 6 million from 2023 to 2025, accounting for over 25% of new cars sold, copper demand generated by this sector is likely to increase significantly in the coming years.

These physical properties also reduce the energy needed to produce electricity, making copper an enabler of various renewable energy systems such as wind, solar power, and grid-scale batteries. According to the Internation Copper Association, green energy infrastructure contains six-times more copper than traditional systems. With renewable energy sources now contributing to nearly a quarter of the world's power, this further highlights the need for a steady copper supply to support the sector's growth.

Copper is also central to the infrastructure that powers new advanced technologies, such as data centres and AI processing facilities, which rely heavily on the metal for efficient power distribution and thermal management. Within the servers themselves, copper is used in circuit boards and connectors, enabling high-speed data transmission and reliable performance. The metal's properties also make it a preferred material for cooling systems, helping to maintain optimal operating conditions within AI processors that generate significant heat. As computing evolves to handle increasingly complex AI capabilities, the need for high-efficiency materials also becomes critical. Each data centre can require up to 50 000 tonnes of copper according to the Copper Development Association, and as AI systems scale, demand for the metal will continue to grow.

With these sectors largely driving copper demand, global consumption of the metal is projected to rise from approximately

Review of copper bearing material from past trenches at Talisman's Fougnar Copper-Silver Project, Morocco.

AI Data Centre utilises copper.

28 million metric tonnes in 2025 to 42 million metric tonnes by 2040 – an increase of 50%. However, despite these strong demand fundamentals, the copper market still faces significant supply challenges. Declining ore grades at existing operations are reducing output efficiency and making it increasingly difficult to keep up with growing global demand. At the same time, supply remains geographically concentrated in Chile, Peru, and China, limiting the pace at which new supply can be brought online and subjecting supply chains to geopolitical and environmental risk. Addressing this projected supply gap will require a new generation of copper projects to be discovered, developed, and brought into production. Without meaningful investment in new production, the market could face a shortfall of up to 10 million metric tonnes by 2040 according to S&P Global.

How Talisman Metals is leveraging Morocco's copper resources

Against this backdrop, Talisman Metals, a company focused on copper exploration in Morocco, is positioned to contribute to the next phase of global copper supply as demand continues to grow. Led by an experienced management team with expertise spanning mineral exploration, mining entrepreneurship, and Moroccan business operations, Talisman is advancing a development strategy aligned with long-term global copper demand trends.

Talisman's goal is to identify and advance copper resources capable of supporting supply requirements. By leveraging its technical expertise and regional experience, the company is positioned within a jurisdiction that is expected to become even more strategically significant as technology copper demand increases, and copper consumers pay more attention to jurisdictional supplier risk.

In February, the company announced its acquisition of the Tirzzit copper project, consisting of two mining licenses covering 16.5km^2. Tirzzit is located 85km north-east of the existing Tizert copper-silver mine, held by the Managem Group, which has an estimated mineral resource of 130 million tonnes and is currently entering commercial production. Both project areas feature sediment-hosted copper deposits, an important but often overlooked source of the metal. Accounting for approximately 20% of global copper production, sediment-hosted deposits that have enough material to justify building a mine, tend to be less expensive to develop than other types of deposits due to the nature of the geology. Porphyry copper deposits are the largest source of copper, but they tend to present unique development challenges due to size. Capex inflation has largely "priced out" porphyry copper mine development to all but the very largest mining companies.

Talisman benefits from Morocco's growing status as a premier destination for mineral exploration and development. With its world-class geological potential and strong mining legislation, the country has a favourable investment climate, with the mining sector contributing approximately $3.9 billion to its GDP in 2024 and representing roughly 30% of total Moroccan exports by value. The 2015 mining code reform was a pivotal step in opening the sector for exploration, aiming to boost foreign investment and position Morocco as a key player in global critical minerals markets.

Being a relatively new jurisdiction, Morocco is significantly underexplored despite ranking as Africa's second most attractive mining destination according to the Fraser Institute. There are multiple copper exploration projects throughout the country where copper mineralisation is even visible at surface, demonstrating the significant prospectivity of the country. However, further exploration campaigns by Talisman and other operators are needed to unlock the full potential of the area. With its geological potential and a commitment to mining sector growth, Morocco presents significant opportunities for companies like Talisman Metals. Looking ahead, the company's exploration efforts scheduled for 2026 at Fougnar and Tirzzit are focused on gaining a deeper understanding of the geography and potential of both projects, which will cumulate in drill campaigns – the ultimate test of any geological project.

Overall, copper's pivotal role in driving the electrification, green energy, and AI sectors highlights its strategic importance across numerous global industries. To meet rising demand and strengthen supply chains, companies such as Talisman Metals are needed to bring new resources online and lay the foundation for the future supply growth of the copper market. ■

Underground mining operations and material handling, where production and ore grades remain key inputs into supply expectations.

World Gold Council – bringing ASGM into the fold

While the World Gold Council members represent a sizeable share of listed gold production mined in line with responsible mining principles and established regulations, around a fifth of the global supply still sits outside this framework. This remains a key concern for the council, which has launched several initiatives aimed at bringing informal producers into the mainstream, John Mulligan, Head of Sustainability Strategy at the World Gold Council, tells *Modern Mining* on the sidelines of Mining Indaba.

John Mulligan, Head of Sustainability Strategy at the World Gold Council.

"Our general estimate is that roughly 20% of global gold supply operates outside the formal market. That does not necessarily mean it is all illicit, but rather that much of it takes place in grey economies, where gold is both produced and traded outside formal investment and regulatory systems. Though it is important to recognise that some of this is criminal activity. Given recent price rises, we expect that share to have grown. We now have a dedicated research programme to better understand the scale of these flows, alongside work to determine what can be done about them."

The World Gold Council is exploring ways to encourage responsible actors in the 'grey' market to enter the formal supply chain, with much of the discussion centred on artisanal and smallscale gold mining (ASGM).

Explains Mulligan: "The reality is that ASGM involves structural challenges that extend well beyond any single company, or even the mining sector itself. These include extreme poverty, weak rule of law in some jurisdictions, and, in certain cases, the involvement of organised crime. There are therefore limits to what industry actors can achieve alone. That said, the World Gold Council has chosen to confront the issue directly. Together with a wide range of partners, we are exploring ways to incentivise responsible behaviour and build the infrastructure needed to support it."

A key element of this approach is building what the World Gold Council describes as a 'coalition of the willing'. The Global Coalition

A miner holds a silver-bearing ore sample at an open-pit operation.

for Action on Artisanal and SmallScale Gold Mining brings together a range of stakeholders, including the World Bank, the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF), and PlanetGOLD — a UN affiliated initiative focused on reducing mercury use in artisanal mining.

"The aim is to create the enabling infrastructure needed to formalise parts of the ASGM sector, while also bringing governments into the conversation. There are several components to this. One is the development and rollout of local processing plants. Another is the coalition itself, which can help coordinate action among stakeholders, including responsible buyers of gold such as central banks. A third involves new technologies that can introduce greater transparency into what is currently an opaque system."

A key incentive, says Mulligan, is offering a fair price for gold produced by artisanal and smallscale miners, but with conditions attached — including reducing and ultimately eliminating the use of mercury. Mercury is widely used in artisanal mining to extract gold from ore, yet it is highly toxic, posing serious environmental and health risks, and remains one of the sector's most significant challenges.

To address this, the World Gold Council is exploring the introduction of processing plants that act as intermediate refining facilities. These plants would process ore from artisanal miners using more advanced technologies that significantly improve gold recovery rates compared with mercury.

Using semi-industrial processing methods, miners can extract substantially more gold from the same ore, earning higher incomes while avoiding mercury use. Mercury recovery rates are often only around 30–40% and, even under optimal conditions, remain far less efficient than modern processing technologies.

"If we can establish these processing plants, they could become important points of leverage for due diligence within the supply chain. A small number of facilities are already operating in Latin America, with several pilot projects planned in West Africa. The real challenge is bringing the right partners on board to make these initiatives viable. Processing plants alone are not enough — they must be supported by appropriate infrastructure, access to technology and support for local miners, and, critically, the backing of local authorities and national governments to ensure the system functions effectively," Mulligan explains.

> **Using specialised technology, it is possible to analyse trace elements within gold at the ore body to generate a unique chemical signature. When that gold later arrives at a processing facility, it can be tested again to verify that it originates from an identified source.**

Another area of innovation is geoforensic 'fingerprinting'. Using specialised technology, it is possible to analyse trace elements within gold at the ore body to generate a unique

Locally, several mines are investing in renewable energy to reduce both emissions and energy costs.

The general estimate is that roughly 20% of global gold supply operates outside the formal market.

chemical signature. When that gold later arrives at a processing facility, it can be tested again to verify that it originates from an identified source.

Mulligan notes that this verificationoforigin technology helps build confidence that gold entering the supply chain comes from its stated source. “We are currently exploring this approach through several pilot projects. Ultimately, the goal is to build an ecosystem that supports transparency and responsible sourcing across the supply chain.”

Engaging central banks

The World Gold Council is also exploring the potential of working through central banks in countries where ASGM production is significant. In some jurisdictions, central banks already purchase gold directly from artisanal miners.

“We have developed, with partner institutions, what we call the London Principles, which set out guidelines that central banks could follow when sourcing gold from the artisanal sector. Alongside this, we are working to create a network of central banks that can support one another in implementing and advancing these principles. In effect, central banks could act as national focal points for promoting responsible sourcing within the artisanal gold sector,” says Mulligan.

Advancing industrywide responsible mining practices

In the formal mining sector, significant progress has been made through the development of the Consolidated Mining Standard Initiative (CMSI), which aims to advance responsible mining practices across the global mining industry.

The initiative, developed over roughly three years, is being advanced by four partners: the World Gold Council, the International Council on Mining and Metals, the Mining Association of Canada, and The Copper Mark.

Following the conclusion of its second and final public consultation, CMSI has now reached a mature stage, with the partners aiming to launch the standard later this year.

The next phase focuses on operationalising the governance model. The Copper Mark will act as the independent secretariat for the Consolidated Mining Standard, overseeing its administration, assurance framework and associated claims policy. An independent, multistakeholder board is being established, and a Chair has recently been announced, marking a key step towards full implementation.

“This represents a significant step forward. The World Gold Council already has the Responsible Gold Mining Principles, but these apply specifically to gold producers. Many large mining companies currently report against multiple frameworks — including the Mining Association of Canada’s Towards Sustainable Mining standard, The Copper Mark, ICMM’s Mining Principles, and, for gold miners, the Responsible Gold Mining Principles. The CMSI has woven these frameworks into a single,

Gold mines often operate in remote locations and, in many cases, must take responsibility for their own energy transition.

consolidated standard relevant to producers across the whole sector, irrespective of size or geography. The aim is to create clear and credible benchmarks that investors and industry stakeholders can use to assess sustainability performance across minerals supply chains."

Collaboration across the value chain

One of the most notable shifts in the gold market in recent years has been the move towards greater collaboration and convergence across the value chain.

"Historically, the industry was highly fragmented, with different parts of the market operating largely in silos. Gold miners typically interacted with refiners only at the point of sale and had limited visibility over where their gold ultimately ended up. At the same time, jewellers and fabricators rarely looked far upstream or asked detailed questions about source and provenance. In many respects, the two ends of the value chain — mining and jewellery — were barely connected."

That dynamic is now beginning to change. Increasingly, the industry is creating forums and collaborative platforms where stakeholders meet regularly to discuss shared challenges and opportunities.

A primary example is the Gold Principles Group, which brings together 14 industry associations, including the World Gold Council and the London Bullion Market Association, alongside organisations such as the China Gold Association, several Indian trade associations, and major jewellery industry bodies.

"The group meets regularly to discuss how the industry can collectively advance key shared priorities — from climate action and responsible sourcing to addressing challenges in artisanal and smallscale mining. The aim is not only to raise awareness, but to encourage practical action and mutual support across the value chain. By working together, different parts of the industry can use their influence more effectively and support one another in driving meaningful change."

Gold mining and climate change

According to Mulligan, climate change remains a defining issue across the gold value chain.

"Most of the sector's emissions are concentrated at the mining stage. In that sense, this represents both the risk and the opportunity. If gold miners can successfully decarbonise their operations, they have the potential to significantly reduce emissions across the entire value chain."

Energy lies at the heart of this transition. Around 60–80% of mining emissions are energy related, meaning the challenge is largely about how mines source and use power. In this respect, gold mining mirrors the wider global economy: decarbonising energy systems is essential to decarbonising industrial production.

"Gold mines often operate in remote locations and, in many cases, must take responsibility for their own energy transition. This has sometimes produced positive outcomes. South Africa provides a good example. The large solar installation at the South Deep Gold Mine demonstrates that industrial-scale solar can successfully support a major mining operation. Importantly, it also helps show policymakers that encouraging self-generation through renewable energy can be a viable industrial strategy."

Locally, several mines are investing in renewable energy to reduce both emissions and energy costs, including Pan African Resources, which has installed solar capacity at Evander and Barberton, and Harmony Gold, which is developing a large-scale project at Moab Khotsong.

> The World Gold Council is exploring ways to encourage responsible actors in the 'grey' market to enter the formal supply chain, with much of the discussion centred on artisanal and smallscale gold mining (ASGM).

Similar developments are taking place globally. Solar installations are becoming increasingly common at mining operations, often as part of hybrid systems that combine renewables with existing power sources. Many mines initially rely partly on fossil fuel generation, before gradually integrating solar, wind and battery storage to increase the share of renewable energy.

Mulligan points to Western Australia, where some operations have progressed from solar installations to incorporating wind generation and battery storage, enabling a significant proportion of energy demand to be met by renewables.

"Where grid supply is unreliable or insufficient, companies have strong incentives to develop their own energy solutions. Renewables offer multiple benefits: they support decarbonisation, improve energy security and can reduce costs. Once installed, renewable systems often deliver attractive long-term economics, with cost savings becoming apparent relatively quickly. This combination of lower emissions, greater energy independence and improved cost stability is helping to drive the growing adoption of renewable energy across the sector," Mulligan concludes. ■

2A – a gamechanger for Kazera

2026 marks a milestone year for AIM-listed Kazeera Global as it transitions from project developer to a profitable mining company. Beyond unlocking value from its Whale Head Minerals (WHM) heavy mineral sands (HMS) project, the company plans to increase diamond production from its Deep Blue Minerals (DBM) project in Alexander Bay, South Africa, CEO Dennis Edmonds tells *Modern Mining*.

Kazera Global's Whale Head Minerals HMS Pilot Plant - Separation Spirals.

Crucially, Kazeera is awaiting the mining right for its 2A permit from the Department of Mineral Resources and Energy. "We have submitted all required documentation, including an environmental guarantee," Edmonds says.

The 2A mining right covers approximately 3 095 hectares, of which 168 hectares contain HMS deposits. With the construction of a suitable processing plant, the company believes the project will be ready for immediate mining.

"At present, we are operating the five-hectare Walviskop heavy mineral project. By comparison, the 2A permit spans around 3 000 hectares, with an initial mining area of 168 hectares—34 times larger than our current operations," Edmonds notes.

"Once 2A comes online, we expect to amplify profitability by 20- to 30-fold, significantly enhancing both the project's value and the company's overall valuation."

Kazera advances its WHM project

Kazera Global holds a 70% stake in Whale Head Minerals (WHM), which operates the Walviskop heavy mineral sands (HMS) project, with the remaining 30% owned by Black Economic Empowerment (BEE) partners. Following a £1.6 million fundraising at the end of last year aimed at accelerating growth across its HMS and diamond operations, the company is pursuing multiple initiatives, including evaluating equipment to achieve higher-purity titanium dioxide, increasing operational shifts, and investing in a new trommel screen.

The WHM project currently operates as an experimental site using a pilot plant. Edmonds describes the extraction process as straightforward: "We dig material from the beach and pass it through a separation process. It is seawater-driven, with non-commercial material returned to the beach, while processed material is trucked to Cape Town."

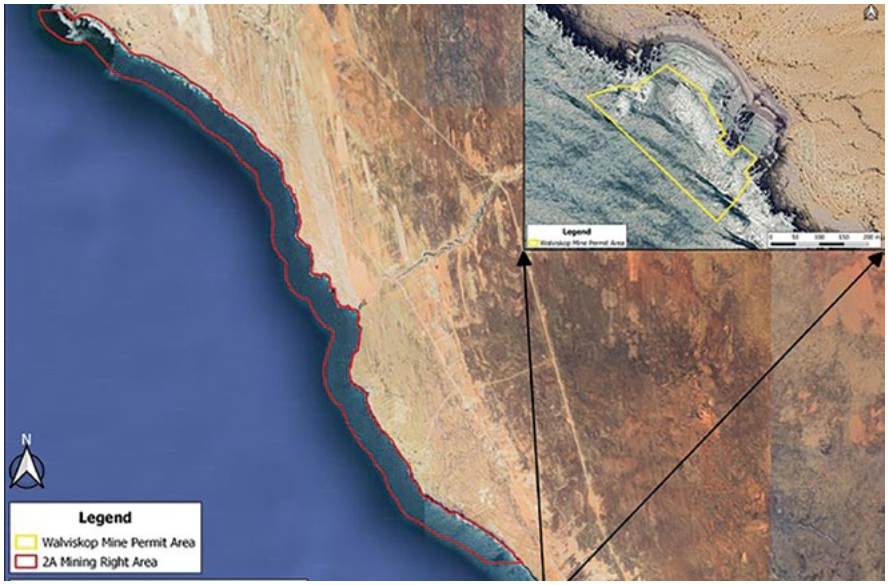
2026 is a turning point for Kazera, as ongoing initiatives aim to move the company into profitable production. "This year, our focus is on ramping up production at the five-hectare site and advancing it toward profitability. Once the 2A permit is granted, we will expand mining there, further increasing production and profitability," Edmonds says.

A recently implemented 1.5-shift programme, operational since mid-February 2026, is expected to raise HMS output to over 4 000 tonnes per month. The trommel screen is being upgraded to improve processing efficiency and product quality, currently delivering around 32% TiO_2 content. This programme is a precursor to two shifts per day, which will require upgrades to the site's lighting system.

Kazera is also exploring ways to increase product purity, evaluating new mineral separation technologies that go beyond traditional spiral separation. "We are testing several options to improve separation volume and titanium dioxide purity. Our aim is to find the optimal balance between volume, purity, and price. Interest from potential off-take partners is already emerging," Edmonds notes.

Market conditions have reinforced the importance of producing higher-purity titanium dioxide. Ilmenite prices have been volatile, peaking in 2022 due to post-pandemic demand and supply chain disruptions, before gradually stabilising in 2024–2025 amid softer demand and high inventories. "We are targeting an increase in TiO_2 content from the basic 24% standard to 32%," Edmonds says, "and are evaluating what the optimum purity would be to maximise both sales and price."

In 2024, Kazera signed a sales and offtake agreement with Fujax South Africa, however, additional buyers continue to approach the company directly. "The interest from multiple



2A and Walviskop tenement.

Whale Head Minerals HMS Pilot Plant.

sources gives us flexibility in off-take arrangements," Edmonds adds.

A key operational challenge remains the project's distance—approximately 800 km from Cape Town. To mitigate high transport costs, Kazera plans to focus on shipping higher-purity product rather than bulk material, enhancing efficiency and commercial value.

The good news, says Edmonds, is that government has plans in place to develop the Boegoebaai port. The Boegoebaai Port Development is a major R122.9 billion greenfield project in South Africa's Northern Cape, located 20 km from the Namibian border, designed as a deep-water port, green hydrogen hub, and manganese export channel. Led by Transnet, the project aims to drive regional economic growth and industrialisation. The project is aiming for operationalisation by the end of the decade.

Unlocking opportunities from diamonds

Plans are underway to maximise the potential of Kazeera Global's diamond operations at Deep Blue Minerals (DBM), with the aim of achieving record recoveries. Recent processing has yielded 45 carats from just 100 tonnes—triple the expected rate. The operation employs advanced technology, including pulsating jigs and Flowsort, to target high-concentration gravel zones, with mining now focused on promising inland blocks.

Edmonds explains that the diamonds recovered have often been naturally polished by river sands during their journey to the ocean. While most stones are small, larger diamonds are occasionally discovered.

"As we mine heavy mineral sands, we often encounter diamonds in the same areas," Edmonds notes. "This does not necessarily mean that all heavy mineral sand deposits contain diamonds, or that all diamond-bearing areas contain heavy mineral sands—but it does often occur."

Local investment

Kazeera's projects are in Alexander Bay in the Northern Cape - an area that is home to a small and highly isolated community of approximately 10 000 residents from the Richtersveld region. This community is culturally distinct and close-knit, with Nama and Afrikaans as their primary home languages.

Due to the region's small population and remote location, it has historically received limited government attention and investment. As a result, opportunities in employment, education, healthcare, and other essential services are scarce.

"If we successfully implement our planned operations, the project has the potential to create a substantial number of jobs across all skill levels — from highly skilled and semi-skilled roles to entry-level positions. For example, in diamond mining, one of the processes involves manually sweeping exposed bedrock to recover diamonds lodged in rock fissures. This type of work provides accessible employment opportunities while forming an important part of the overall mining operation."

Strengthening the management team

In tandem with investing in bringing the project into production, Kazera has been strengthening its management team.

"We are in the process of appointing two people in South Africa to provide additional levels of expertise and input and looking at other appointments in the UK. As we grow from being a small company with a relatively small turnover into a big company, delivering roughly 20 or 30 times our current production and a company generating substantial revenue, it is imperative that we invest in infrastructure and manpower to align accordingly," Edmonds concludes. ■

Kazera

The Whale Head Minerals (WHM) heavy mineral sands (HMS) project, located in Alexander Bay, South Africa, primarily produces garnet and ilmenite. The operation also contains, or has the potential to produce, zircon and rutile. The project targets high-grade titanium dioxide feedstock (around 32% content) and, in conjunction with associated operations, also produces diamonds.

Approximately 86%–90% of ilmenite is used in the manufacturing of pigments for paints, coatings, plastics, and paper. Strong demand from construction and automotive sectors typically boosts prices, while weak economic activity reduces demand and lowers prices.

Fulcrum Metals partnered with Extrakt Processing Solutions, which has developed a groundbreaking zero-cyanide, zero-waste process for tailings recovery.

Fulcrum leverages **off the golden era**

Driven by the surge in gold prices, which surpassed $5 000 per ounce by early 2026, gold miners and technology specialists are exploring innovative solutions to reprocess gold tailings. Fulcrum Metals, a UK-based mining company, is advancing the opportunity through its partnership with Extrakt Processing Solutions, which has developed a groundbreaking zero-cyanide, zero-waste process for tailings recovery. Through pilot scale test work, the process has achieved high recoveries of gold, silver, copper, tellurium, and manganese in just six hours, CEO, Ryan Mee tells *Modern Mining*.

With the gold price increasing from $1 471 per ounce in March 2020 to a recent high of $5 417 per ounce, miners are clamouring to unlock opportunities from tailings storage facilities (TSF).

"While the strong gold price has certainly garnered significant interest from gold miners eager to reprocess TSFs, there are however, some that have taken the wait and see approach, expecting gold to continue its meteoric rise."

Fulcrum, a young company that listed on the London Stock Exchange in February 2023, recently shifted focus from exploration to tailings recovery, with partnerships and acquisitions in Canada. Its strategy involves working with asset holders to address tailings on a collaborative basis.

The AIM quoted company is pioneering the use of an innovative technology to recover precious metals from mine waste (tailings) and the remediation of the sites. This approach enables Fulcrum to monitise the valuable contained metals, improve environmental outcomes and strengthen the social licence to operate.

The company is focused on recovering precious metals from legacy mine tailings in Canada, specifically targeting two main sites in Ontario: the Teck Hughes and Sylvanite gold tailings. The two sites are located just three kilometres apart, allowing for a regional processing hub approach. The combined estimate for the sites is over 10 million tonnes of material with potential for significant gold and critical mineral recovery.

Fulcrum is advancing these sites towards production, with a 2025 pilot plant study and resource definition work (auger drilling) currently underway.

The tailings reprocessing expert began a pilot plant scoping

study for its tailings projects with Test Design Implement Solutions LLC (TDI) for upscaling work at its Teck Hughes and Sylvanite tailings projects in Kirkland Lake, Ontario. TDI will be supported by Extrakt Process Solutions LLC (Extrakt) and Bechtel Energy Technologies & Solutions (Bechtel).

The company commissioned TDI to undertake the study to identify the best way to advance from successful laboratory scale tests to a pilot-scale operation. The decision was taken after assessment of the Phase 3 optimisation metallurgical results announced by Fulcrum in early February 2026, which demonstrated materially improved gold recoveries, polymetallic potential and operational efficiencies using the Extrakt process.

"The financial metrics for the Teck Hughes site include an estimated six and a half million tons and a gold grade of 0.66 grams per ton. The tailings process is now achieving a recovery rate of over 70% and so the improved metrics have significantly increased the NPV and IRR, with potential for multi-fold improvements, including the potential for NPVs in excess of $100 million and IRRs more than 50%."

Mee says that the process, endorsed by Bechtel Engineering, can handle 2 000 tons daily, significantly reducing project timelines. Fulcrum expects to be in production within 12-18 months. The company, valued at £10 million, aims to scale up quickly with partners like Extrakt Process Solutions.

"Fulcrum's goal is to monetise legacy assets and liabilities, support local communities, and accelerate the adoption of our technology. The plan is to commercialise the process through a pilot testing centre, generate value for both investors and communities by rehabilitating tailings sites. Growth will be driven aggressively, leveraging strategic partnerships and resources from leading firms such as Bechtel."

Fulcrum's strategy goes beyond gold, targeting a broad spectrum of minerals and metals, including silver, copper, base metals, manganese, cobalt, and other precious metals—all in strong demand.

Mee is particularly excited about expanding into critical minerals, such as lithium, cobalt, nickel, copper, and rare earth elements. These materials are essential for the transition to low-carbon energy, powering advanced technologies, and supporting national security. They are critical for manufacturing electric vehicles, wind turbines, and solar panels, with demand projected to increase sixfold by 2050.

"What excites me most is the opportunity to access key critical minerals used in advanced technologies and defence, including gallium, titanium, cobalt, tungsten, tantalum, and graphite," Mee says. "China currently dominates the processing of many of these specialist minerals, but we are taking a different approach. We're not just acquiring deposits—we are developing ways to extract and process these minerals alongside gold. Gold processing provides a unique gateway to these other strategic minerals, which governments actively seek to support munitions and technology initiatives."

Fulcrum Metals undertaking auger drilling at Teck Huges.

Environmental and scalability benefits

According to Mee, the new process is a gamechanger for the industry as, apart from a potential to unlock critical minerals from tailings, it emphasises clean sites.

The environmental benefits include reduced water usage and less impact on local communities.

"Fulcrum's technology creates a closed-loop system for tailings management, transitioning to dry stack storage while simultaneously recovering metals, water, and reagents. By keeping reagents and water within the process loop, we not only achieve significant cost savings but also drastically reduce our environmental footprint and the need for new raw material inputs.

"The new technology can handle 2 000 tons a day, significantly reducing project timelines and allowing for the co-extraction of metals."

Mee explains that with the use of the innovative technology, communities will be able to live alongside tailings recovery processes.

"In Canada's historic mining regions, mine waste was often deposited across the landscape, with communities frequently located near tailings sites. Our technology enables the safe reprocessing of these tailings, extracting gold while neutralising harmful chemicals. This not only rehabilitates the site but also restores the land, making it safe and usable for local communities."

Fulcrum's goal is to monetise legacy assets and liabilities, support local communities, and accelerate the adoption of our technology.

Fulcrum Metals

Fulcrum Metals is a company pioneering the use of innovative cyanide-free technologies to recover precious and critical metals from historic mine waste.

The company is focused on recovering precious metals from legacy mine tailings in Canada.

Fulcrum Metals partnered with Extrakt Processing Solutions, which has developed a groundbreaking zero-cyanide, zero-waste process for tailings recovery.

Fulcrum Metals Sylvanite Tailings.

Expansion and market opportunities

Although Canada is a major mining jurisdiction with decades of opportunity, Fulcrum's expansion strategy targets markets beyond Canada, focusing on opportunities that align with the company's expertise and capabilities.

"We are exploring collaborations and partnerships with mining companies to process their tailings or acquire additional sites," Mee explains. "Each opportunity is evaluated on its own merits, with an eye on untapped potential. Our goal is to deliver significant value to both investors and local communities, leveraging strategic partnerships and resources."

To establish proof of concept for its innovative technology, Fulcrum initially acquired its own sites. "Our strategy is to work with asset holders—government or private—to address challenges associated with tailings storage facilities (TSFs). In some cases, we may take ownership of a TSF, while in others, we partner with the owners to rehabilitate the site, generate revenue, and reinvest in other projects."

Africa, with its long mining history, represents a particularly attractive growth opportunity. Fulcrum is considering countries such as South Africa and Ghana, where Canadian, Australian, and UK-based companies are already active. The company engaged with potential partners on the sidelines of Mining Indaba to establish relationships across the continent.

"There are opportunities to run pilot projects in Africa, and multiple projects can operate simultaneously. The size of the project—whether 5 000 tonnes, 10 million tonnes, or 100 million tonnes—does not change the process," Mee notes.

"Fulcrum is currently positioned as a £10 million company, but our strategy goes beyond scaling individual projects—we aim to grow the business as a whole. We have laid the foundation blocks and are aggressively pursuing expansion," he concludes. ■

From innovation to implementation: AZTEC Mining builds momentum at Mining Indaba

Building on its recent work around redefining gold processing economics, AZTEC Mining entered Indaba with a focused message: "Meaningful value remains in as-arising tailings, and recovering it is both technically achievable and economically compelling". Industry response confirmed that this perspective is gaining traction.

"The industry is no longer questioning whether additional recovery is possible. The focus has shifted to how quickly it can be implemented".

Aligning with industry priorities

A consistent theme across engagements was the shift toward improving gold recovery performance within existing operations, mainly due to a lucrative gold price. Rather than pursuing large-scale expansions, many operators are prioritising technologies that enhance recovery, improve efficiency, and reduce environmental impact within current plant footprints.

The AZTEC Upflow Reactor (AZ-UFR) aligns directly with this approach. Installed as a scavenging circuit, the AZ-UFR enables additional gold recovery from as-arising tailings without disrupting upstream processing. Its ability to integrate into existing flowsheets with minimal impact proved to be a key driver of interest during the event.

From engagement to execution

While Indaba remains a key forum for technical engagement, success is ultimately measured by progress beyond initial discussions.

For AZTEC Mining, one engagement progressed to commercial conversion, demonstrating confidence in the AZ-UFR as a practical recovery solution. In parallel, several discussions advanced into detailed metallurgical test work planning, indicating a strong level of intent from operators evaluating implementation.

Many of these engagements were built on existing relationships, with face-to-face interaction enabling deeper technical alignment and accelerating the transition from concept to evaluation.

"The shift from interest to test work is a critical step toward implementation and long-term adoption."

AZTEC's Upflow Reactors.

Braam Smit, Ruan Kukard and Barry Beylefeld at AZTEC's Investing in African Mining Indaba stand in February 2026.

Recovery and environmental performance

The strong response to the AZ-UFR reflects a broader shift in mindset. Gold remaining in as-arising tailings is increasingly viewed as a recoverable resource rather than an unavoidable loss.

At the same time, the technology's ability to significantly reduce residual cyanide in final tailings supports improved environmental performance. This dual benefit of enhanced recovery and reduced environmental impact is proving to be a key driver of adoption.

Building momentum

With deals progressing and a strengthened pipeline, AZTEC Mining left Indaba with clear commercial momentum. The company continues to position itself as a provider of practical, high-impact recovery solutions that enhance existing operations without requiring major plant modifications.

As the industry seeks more efficient ways to improve performance, tailings gold recovery solutions are expected to play an increasingly important role.

"What was once considered the end of the process is now becoming one of its most valuable stages."

Looking ahead

The shift toward maximising recovery from as-arising tailings is no longer theoretical. It is actively being evaluated and implemented across the industry.

AZTEC Mining's focus now turns to execution, working with partners to advance test work and deploy AZ-UFR systems. This momentum will continue at West African Mining & Power Expo (WAMPEX) in June, where further engagement with African operators is expected.

As adoption grows, technologies such as the AZ-UFR are contributing to a broader evolution in how recovery, value, and performance are defined in modern gold processing. ■

The Redpath Group
global expertise, local experience

The Redpath Group has over 60 years' experience delivering mining service excellence across the globe, and Redpath Africa, through operations in South Africa and across the continent, has been operating for 32 years.

In this challenging environment characterised by its cyclical nature, how exactly has the company successfully navigated the mining business environment for over 60 years?

"We have the expertise, track record and qualifications to support any scope of work, even in the most remote parts of the world. Our projects are started well on time and executed with the highest safety standards and exceptional workmanship. We serve our international client base from our offices and facilities across the globe," André Nel, General Manager, New Business, Redpath Africa Limited, tells *Modern Mining*.

Backed by Redpath's core value of "Safety - First, Last and Always", this operating philosophy guides decisions at every level of the organisation.

The philosophy has underpinned its operations for more than six decades and continues to serve as a key differentiator in an industry characterised by significant operational risk. This has positioned the company well within the South African mining sector, where the pursuit of zero harm remains a central priority.

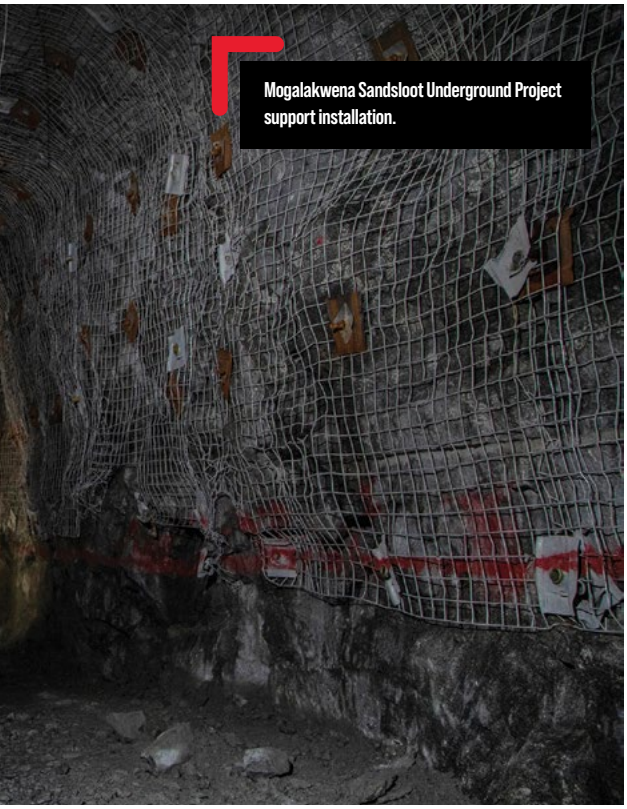
Discussing global diversification, Nel says this focus has helped to reduce exposure to various local market volatility. The Redpath Group's global expansion plays a critical role in strengthening its resilience within the cyclical mining sector. From its early work in the Canadian Arctic to establishing operations across Africa, Australia, Asia, Europe, and the Americas, the Redpath Group has leveraged geographic diversification to lessen exposure to regional market fluctuations while meeting client needs operating in remote and technically demanding environments. This global presence is supported by a workforce that has grown to several thousand employees, underpinned by deep technical expertise and proven project execution capability.

Globally, the Redpath Group employs roughly 10 000 employees, executing around 100 projects in 12 countries across 5 continents. Being part of an international mining contracting business provides Redpath Africa Limited with access to "best in the field skills" and best practices from around the world.

> The Redpath Group has one of the most modern, and technologically advanced contractor fleets in the industry. This is achieved through a global agreement with Sandvik as well as access to Redpath Group funding.

"Access to global expertise and best practices has enabled the implementation of a Hybrid High-Speed Development model, currently in place at the Mogalakwena Sandsloot Project, as part of the transition to an underground mine. This model integrates specialist Australian expatriates well versed in high-speed lateral development with local South African employees. The combination leading to world-class high-speed development with strong local knowledge of regulations, labour, and operating conditions. The result is delivery of development on schedule and quicker than similar operations underway in South Africa and on par with performance globally. A key measure of success has also been the ongoing transfer of skills and expertise to local employees and a reducing ratio of expatriates to locals as the project has developed."

Nel adds that while development costs exceed traditional development costs, the real value seen by clients lies in



Mogalakwena Sandsloot Underground Project support installation.

accelerated access to the orebody. The result is the reduction in the project delivery pays for itself through earlier access to the ore body from a net present value (NPV) perspective.

"The Redpath Group has one of the most modern, and technologically advanced contractor fleets in the industry. This is achieved through a global agreement with Sandvik as well as access to Redpath Group funding. This enables us to support our client's needs in respect of execution of large-scale mining projects. The recent acquisition of RUC in 2024 further expands our team of experienced shaft sinking specialists and access to further shaft sinking equipment."

Current key projects underway:

- De Beers Consolidated Mines; Venetia Underground Project: Mining Services for Decline and Lateral Development (>20km over last 5 years), managed through an Integrated Owner`s Team.
- Northam Platinum; Zondereinde Western Expansion Project: Equipping of No. 3 Men and Material Shaft to a depth of 1430m.
- Northam Platinum; Zondereinde 3 Shaft Project: Underground infrastructure development and construction, 4 years duration.
- Debswana Diamond Company; Jwaneng Underground Project: Decline and Lateral Development (>26km over 6 years) inclusive of underground equipping and roadway construction. Raiseboring, slipe and line of a 669m deep 7.5m finished diameter ventilation shaft.
- Rustenburg Platinum Mines; Mogalakwena

The Ghaghoo Sand Tunnel Project showing the concrete lined decline.

The Mogalakwena Sandsloot Underground Project surface workshop area.

Zondereinde Western Expansion Project 3 Shaft men and material shaft.

Zondereinde Western Expansion Project 3 Shaft headgear and winder-house.

Sandsloot Underground Project: Decline and Lateral Development (>10km over last 4 years) along with underground construction, installation of associated services, raiseboring and soon to start production stoping.

Exceptional service remains a hallmark of Redpath Africa Limited, as affirmed by Stephan Nothnagel, General Manager – Mogalakwena Underground at Valterra Platinum: "Our partnership with Redpath at the Sandsloot Underground Project has been built on a foundation of trust, shared values, and a consistent commitment to safe, high-quality execution. Redpath Africa Limited's disciplined approach to safety, their adoption of modern mechanised mining technologies, and their ability to deliver reliably against key performance indicators have made them an exceptional partner in advancing underground development at Mogalakwena. Their team works collaboratively with ours, aligning on expectations, solving challenges proactively, and continuously raising the standard in operational excellence. The results speak for themselves—strong safety performance, impressive development rates, and a culture of teamwork that enables sustainable, long-term success. We value the partnership and look forward to continuing this journey together."

Growing the African footprint

According to the International Energy Agency, global demand for critical minerals and metals is experiencing significant growth, driven by the clean energy transition, electric vehicles (EVs), and grid infrastructure development. Lithium demand surged nearly 30% in 2024, with nickel, cobalt, and rare earths also rising, signalling a robust long-term need for materials.

This commodities bull market sees Redpath Africa Limited eager to grow its African footprint, says Nel, adding that there is a robust pipeline of large-scale mining projects scheduled for development in Africa over the next few years (2026–2030).

"Strong demand for key commodities is creating a favourable operating environment for Redpath Africa Limited. Tight supply conditions, sustained demand for critical minerals, and significant capital investment across global mining markets are collectively expanding the volume and diversity of underground mining projects. This trend reinforces Redpath Africa Limited's strategic position in the industry and supports both near term activity levels and long term business growth," explains Nel.

Evolving to meet the growing needs of mining

In line with a focus on participating in large-scale projects across the continent, Redpath Africa Limited has strengthened its skill set. We continue to attract key individuals aligned to our growth strategy, supported by our Guidelines for Success, ensuring we are well positioned to continue serving our clients effectively.

Beyond this, Redpath Africa Limited recently expanded its scope of services and included a greater offering of Mining Services which includes:

- Ore pass rehabilitation
- Drop raising
- Slipe and line
- Exploration drilling & water sealing
- Secondary support
- Along with the continuation of raiseboring and construction works

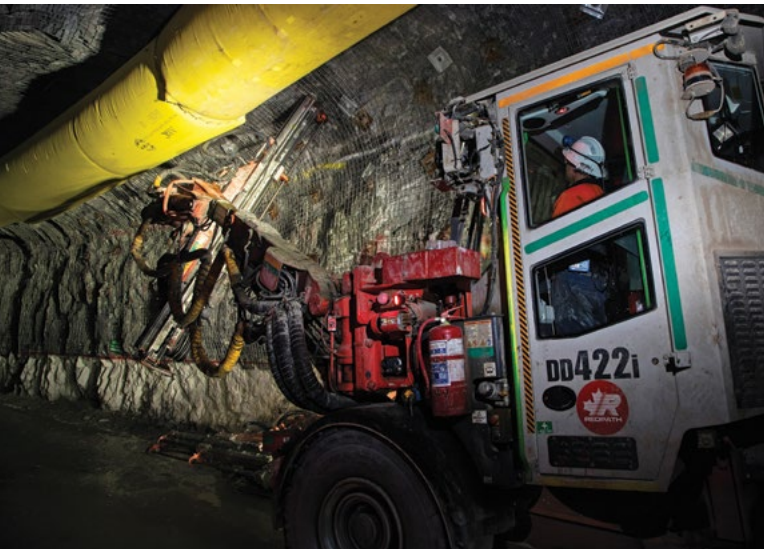
"The reason for expansion of Mining Services is to ensure that we are able to offer a comprehensive underground service to our clients and act in their long term interest, explains Nel.

Innovation and technology

"The Redpath Group's long term strategy has consistently emphasised engineering excellence and technological advancement. We continuously innovate in shaft sinking, raiseboring, mechanised mining, and digital systems. A key factor in our sustained success has been our commitment to engineering excellence and technological advancement," says Nel.

Over the years, the company has pioneered numerous industry shaping innovations—from early shaft sinking systems and mechanised raiseboring equipment to modern integrated control systems and high capacity Redbore raiseboring machines. These advancements have allowed Redpath to operate more efficiently, enhance safety performance, and maintain a competitive position even as mining conditions have grown more challenging and ore bodies deeper and more complex.

Some examples of innovative technologies and operational methods employed by Redpath Africa Limited include the Gem Diamonds Ghaghoo Sand Tunnel project, located within the Central Kalahari Game Reserve in Botswana. For this project, Redpath Africa Limited constructed a decline tunnel using a specially designed 96-ton open-face tunnel shield, advancing at



Mogalakwena Sandsloot Underground Project support installation.

an inclination of −8° to reach the underlying basalt rock.

"For an ore body located below 80 m deep desert, we deployed a technology similar to that used to develop the London Underground Railway System. While this technology may not be new, it has never been used before in unconsolidated sand or in a decline. The project was an unprecedented world first at 6.1 m in diameter by 473 m in length."

A further technical innovation relates to an early warning detection system to alert the Raisebore Operator of an imminent in-hole equipment failure.

"Essentially, failure to detect cracks or disconnects in the stem, stabilisers, drill string, or float box can lead to catastrophic equipment loss. The Drill String Pressure Pump provides operators with immediate warning of potential faults, enabling rapid intervention to prevent reamer or drill string separation. Once a fault is identified, corrective action can be taken to minimise risk. The system's effectiveness was demonstrated during a recent project in Obuasi, Ghana, where it successfully detected a cracked stabiliser in-hole."

Finally, the adoption of innovation through the development and implementation of the Semi-Automated Shaft Excavator (S100), by Redpath Deilmann. This system features an excavator arm mounted centrally beneath the working platform within a vertical shaft - it is remotely operated from surface level. Equipped with a range of interchangeable tool attachments, it enables the simultaneous execution of multiple tasks, improving efficiency and overall productivity.

Collaboration remains a key pillar across the group and various global technical workshops across its core disciplines, including development, shaft sinking, raiseboring, mechanised mining, and other specialised services are undertaken. These workshops provide structured forums bringing together technical experts, project leaders, and operational teams from across the business to share best practices, review lessons learned, and present emerging methodologies and technological innovations.

Training and skills development

"Our people remain our most important asset and as such we continue to invest in development and training of our employees. This includes the knowledge transfer that is undertaken from our Australian fellow employees who are coaching and mentoring our local employees on site. Further to this we are currently developing portable training capabilities such that training is undertaken onsite rather than at a centralised training facility. This also ensures that training can be accessed as often as is necessary. To support this, the company is investing in resources and advanced hardware incorporating augmented reality. This enables specialist trainers to deliver highly realistic, life-like simulated training in a safe environment, thereby eliminating the risk of injury or damage to equipment."

> We continue to attract key individuals aligned to our growth strategy, supported by our Guidelines for Success, ensuring we are well positioned to continue serving our clients effectively.

Competency assessments will be conducted electronically using simulators and handheld devices, ensuring a more efficient evaluation processes.

"Over the next two years, this technology will be tailored specifically to Redpath Africa Limited's suite of trackless equipment, as well as shaft sinking and raiseboring operations," concludes Nel. ■

The Redpath Group's service offering

- Redpath is a full-service underground mining contracting and engineering firm, a "one stop shop" to clients in every major mining market around the world.
- The company offers a complete range of underground mining services, including mine development, mass excavation, shaft sinking, production mining, raiseboring, mechanised raise mining, underground construction, mechanical excavation, production drilling and speciality services.
- The Redpath Group Philosophy makes a commitment to:
  - provide a level of service to the mining industry which will exceed
  - normally accepted standards;
  - create a desire in the industry for our continuing services;
  - provide scope and challenge for our employees;
  - control growth in order to maintain a high calibre of service to the industry.

This philosophy has served Redpath well since 1962, and it will continue to support our belief that, at Redpath, "Challenge is an important part of life."

Cementation Africa to equip Mindola Shaft **for the future of Nkana mine**

Cementation Africa is leveraging its decades of experience in shaft sinking and underground mining at Mopani Copper Mines' Mindola shaft in Zambia – paving the way to extend the life of the Nkana mine at Kitwe and to improve its mining efficiencies.

Assembly of the headgear centre columns progresses as key structural elements are positioned on site.

The scope of work comprises construction and erection of the permanent headgear including the rope-up and commissioning of the winders to enable detailed 3D scanning of the shaft to determine alignment correction and structural reinforcement to ensure safe and efficient conveyance operation. In addition, the project also includes the Installation and commissioning of an overland conveyor system.

According to Ben Adendorff, Cementation Africa's In-Country Executive for Zambia, the focus is on readying the Mindola shaft for production - by sliping and equipping the remaining 500 metres.

"To determine the exact degree of misalignment, Cementation Africa will complete a 3D scan of the complete shaft," Adendorff says. While another contractor raisebored this particular shaft, Cementation Africa successfully completed the sinking and equipping of Mopani's Synclinorium and Mufulira Henderson shafts over a decade ago. The sinking and equipping of the 1,280 m Synclinorium shaft - at 7 m diameter - was conducted between 2011 and 2014 and was then equipped for commissioning and handover in 2016 The sinking and equipping of the 1,580 m Mufulira Henderson shaft – at 6 m diameter – was commissioned in June 2020.

"Our current work at Mindola includes the removal of the sinking headgear and winders, and the installation of a new permanent headgear, after which we can rope-up and commission the new winders," he explains. "This will allow us to scan the shaft from top to bottom with specialised equipment, including the length of shaft already equipped above a depth of approximately 1,000 m."

This will allow the verifying of the correctness of the existing

Structural steel components of the ore loading bin prepared for assembly on site.

Pre-assembly of the headgear centre column is underway, ensuring alignment and structural integrity before installation.

An 80 ton mobile crane lifts a section of the ore loading bin as part of ongoing structural installation activities.

With the new winder house visible in the background, four mobile cranes lift steel sections for the pre-assembly of the headgear.

steel members that will guide the conveyances down the shaft, and addressing of any issues identified. Below the 1,000 m mark. The bottom 500 m of the shaft barrel will then be sliped and lined to ensure a true vertical line through which the conveyances can travel safely.

"We will the proceed with the equipping of the shaft and construction of the loading box steelwork at the shaft bottom," he says.

The company's legacy in some of Africa's deepest and most challenging shaft-sinking projects has been key to its success and reputation in Zambia, according to Hercilus Harmse, Engineering Services Executive at Cementation Africa. He points to southern African projects such as the 1 200 m shaft at Palabora Mining Company - safely reaching its final depth in 2024 - and the 2 750 m ventilation shaft at South Deep.

"Many of our projects are conducted in environments where there are poor ground conditions or where extensive de-stressing of rock is required," Harmse says. "We bring this experience into our designs and execution ensuring that we can apply innovative solutions - using our fleet of specialised equipment for rigging, winding and shaft sinking."

Safety remains a cornerstone of Cementation Africa's reputation in Zambia and globally, highlights New Business Director Graham Chamberlain. Over the last 12 years of shaft sinking and mine development, the company has achieved over eight million fatality free shafts.

"This is the result of consciously building a safety culture on every site and prioritising safety in all our planning and design work, using industry experience to learn from every incident," Chamberlain says. "Particularly with equipment that is critical to safe operations, we develop and apply duplicate systems so there is always a backup. With winders, for instance, we ensure that an electronic system will be duplicated by a mechanical system in case of failure."

Adendorff notes that, while technical capability and experience have made Cementation Africa the preferred contractor in its field in Zambia, the company has also made an important community contribution through its long presence in the country. This includes the building of a school for the deaf in 2016 - which today caters to over 100 children - and an orphanage feeding scheme.

"Our history in Zambia has also made us an employer of choice, as everyone knows our value system and the respect with which we treat our employees," he concludes. ■

De Beers sets new safety benchmark through ownership culture

De Beers Group has achieved the lowest total recordable injury frequency rate (TRIFR) in its 135-year history, reflecting the strength of a safety culture embedded at all levels of the business.

Tefo Molosiwa, Head of Policy & Planning: Safety, Sustainable Development and Risk at De Beers Group.

Employees demonstrate visible, engaged leadership at Venetia Underground mine, South Africa.

Its 2025 TRIFR of 1.0 across global operations represents a further improvement on the previous year's record performance. According to Tefo Molosiwa, Head of Policy & Planning: Safety, Sustainable Development and Risk at De Beers, this achievement is rooted in a deceptively simple principle - ownership.

"At De Beers, we have leaned into the experience, care and institutional knowledge in our teams by listening, learning and partnering rather than instructing," Molosiwa says. "This has delivered a level of ownership and leadership in the health and safety space that really delivers value for us."

Across operations in Botswana, Namibia, South Africa and Canada, De Beers' safety strategy draws heavily on the expertise of artisans, operators and contractors. Frontline employees - including truck drivers, electricians, maintenance crews and pit operators - are often drawn from surrounding communities, many having grown up with the mine as part of their lived experience.

"They understand mining, rock, plant, equipment and on-mine processes, so we deliberately create space for this operational knowledge to shape safety controls," he explains. "The result is a trust-based system in which accountability runs both upward and downward, rather than imposing top-down safety directives."

While the general manager remains legally accountable for safety, Molosiwa notes that leadership must ensure that the necessary processes and resources are in place. At the same time, those working at the coalface must trust that they have been given the tools and support needed to carry out their work safely.

"In this framework, trust is not aspirational - it is operational," he says.

A cornerstone of the De Beers approach is 'critical action closure'. One example how this is implemented is through the company's Safe Sentry programme. The process focuses on the constant identification of hazards and on strong partnership and accountability between teams on the ground and their leaders to ensure that controls are implemented swiftly and at the required standard. The commitment to identifying hazards loses its value if action is not taken, or if the speed of response does not reflect the level of risk present on the ground.

Hazards identified on the shop floor are escalated to leadership, with solutions co-developed between frontline teams and management. Importantly, there is formal accountability for closing these actions and verifying the effectiveness of the controls implemented.

"Identifying the issue is only the first step," Molosiwa notes. "What needs to follow is the co-development of action and accountability on the effectiveness of that closure."

This disciplined focus on high-consequence risks helps prevent safety systems from becoming diluted by excessive

activity. Instead, effort is aligned with risk criticality, which is a hallmark of mature safety management systems.

De Beers has also deliberately evolved the concept of 'visible felt leadership (VFL)' - traditionally encouraging senior managers to be present in operational areas - into what it calls 'leadership time in the field'. Molosiwa emphasises that this shift represents more than a change in terminology.

"Earlier VFL models risked becoming inspection-driven exercises, with leaders defaulting to directive behaviours," he explains. "Our reframed approach emphasises listening, coaching and humility."

Through structured and ad hoc site visits, leaders focus on understanding operational realities rather than issuing instructions. These engagements help surface emerging risks early while creating feedback loops that translate into practical operational improvements.

"In those small one-on-one or group conversations, we find it easier to get to the real crux of each issue," he says. "The outcome is a continuous learning cycle in which strategy is informed by operational reality and adjusted accordingly."

Another critical foundation of the De Beers operating framework is the integration of safety into enterprise strategy. Rather than running parallel production and safety systems, the company embeds safety risk considerations directly into business planning.

"From a corporate perspective, the team conducts macro- and micro-risk analyses, examining external factors such as climate change and socio-political dynamics alongside internal factors including operational planning, logistics and talent," he explains. "These feed into enterprise risk assessments that inform the company's five-year Origin strategy."

Safety, health, environmental and social governance (ESG) considerations are then translated into clear business expectations for operations. Standards are derived from quantified risk assessments and legal requirements, ensuring consistent control application across sites.

"We want to understand risk at a quantifiable level," Molosiwa points out. "This means that we assess each control we put in place by exactly how much it reduces risk."

These risk-based standards are supported by structured induction programmes, competency frameworks, emergency preparedness systems and formal assurance processes, often aligned with ISO management system standards.

"The result is a closed-loop performance management system that links strategy, risk, standards, people capability and assurance into a coherent whole," he concludes. ■

Collaboration and data-driven readiness to shape africa's next phase of PDS adoption

As South African mines deepen their focus on Zero Harm, the effective implementation of Level 9 Proximity Detection Systems (PDS) is emerging as both a compliance imperative and a test of industry alignment. Booyco Electronics CEO Anton Lourens spoke to *Modern Mining* and explained that the real differentiator in Africa's PDS journey will not be hardware alone, but structured collaboration across the mining value chain.

Anton Lourens, CEO of Booyco Electronics.

Level 9 vehicle intervention for collision avoidance has been mandatory on South African mines since 2022. The requirement calls for engineering controls on trackless mining machines (TMMs) to automatically slow down or stop vehicles to prevent machine-to-pedestrian and machine-to-machine collisions. While the technology has developed rapidly, Lourens says effective roll-out remains slower than expected.

"The challenge is no longer whether the technology works," he explains. "It is whether operations are ready to integrate PDS into daily activities, safety systems and workflows."

Alignment across the value chain

Booyco Electronics, with nearly two decades of experience as the pioneer of collision avoidance and PDS development, has seen the technology evolve from basic detection systems to data-centric safety platforms. Lourens stresses that progress has only been possible through sustained partnerships between mines, OEMs, suppliers and regulators such as the DMPR.

"Effective PDS rollout only happens when suppliers, OEMs, mines and regulators work in step," he says. "No single stakeholder can deliver this alone."

Mixed fleets and increasingly complex operations further underline the need for cooperation. As sensor fusion advances - combining various technologies - interoperability and supplier-to-supplier collaboration become essential to achieving full fleet-wide protection.

Risk first, technology second

A recurring theme in successful deployments is risk-led planning. Lourens emphasises that PDS must align with a mine's baseline risk assessment and traffic management plan.

"Reducing vehicle-pedestrian interaction through good traffic design lowers risk before you even switch on a system," he notes. "PDS must complement optimised traffic flows, not compensate for poor planning."

Continuous analysis of incident hotspots and congestion areas can inform traffic adjustments. Misalignment, however, can result in excessive warnings and so-called "PDS fatigue", where operators begin to ignore alerts - undermining safety objectives.

The choice of PDS technology must also reflect the operating context, whether underground or surface, hard rock or coal. Crucially, it must not introduce unintended risks or compromise production systems.

Operational readiness and change management

Lourens identifies operational readiness as one of the most underestimated factors in Level 9 compliance. In some cases, hardware may be on site but supporting processes, training and

Integrating the right technologies with effective processes and behavioural alignment is key to safer mines, a principle strongly supported by Booyco Electronics.

As mines advance their Zero Harm journey, Booyco Electronics notes that integrating Level 9 Proximity Detection Systems into daily operations is essential for meaningful safety outcomes.

Effective Level 9 Proximity Detection System implementation requires alignment across the mining value chain, with Booyco Electronics highlighting the importance of collaboration between mines, OEMs, suppliers and regulators.

infrastructure are not fully prepared.

"Successful adoption demands coordinated involvement from engineering, production, finance, HR and safety from day one," he says. "Finance must weigh capital and lifecycle costs against safety and efficiency gains. HR must oversee training. Production teams must understand operational implications."

Structured change management is equally critical. Unlike visible mechanical equipment, some PDS functionality operates invisibly via radio frequency technologies, making early engagement and communication essential.

"At the start of deployment, some operators test the boundaries to see when the machine will stop," Lourens explains. "But Level 9 intervention is the last barrier. PDS is an operator support tool not a substitute for responsible driving."

From induction programmes to ongoing reinforcement of best practice, behavioural alignment remains central to long-term success.

From reactive alerts to proactive analytics

Over the past 20 years, PDS technology has evolved into a sophisticated data platform capable of delivering real-time insights. By integrating multiple sensing technologies and deploying location systems mines can now analyse operator behaviour, vehicle interactions and traffic flow patterns.

Using onboard computing, algorithms are processed directly on the machine, while consolidated data and reports are generated via control centres. This approach mitigates connectivity constraints often experienced in remote or underground environments.

Data insights extend beyond collision prevention. Harsh braking and repeated risky interactions can be identified, enabling targeted coaching and corrective measures. In high-traffic areas, analytics may reveal queuing or congestion, informing adjustments to traffic management or even fleet size.

Booyco Electronics' BEAMS (Booyco Electronics Asset Management System) reporting suite supports configurable analytics aligned to site-specific requirements. Integrated into control rooms or used as a measuring and training tool, BEAMS enables mines to visualise behavioural patterns and reinforce safer operating practices.

"Data drives decisions," Lourens says. "When employees see how their behaviour affects others it becomes a powerful management of change tool."

Extending safety beyond collision avoidance

Beyond vehicle interaction, PDS-related technologies are also supporting compliance with Chapter 16 of the Mine Health and Safety Act, which requires systems to locate missing persons (MPL). In different scenarios location capability can significantly reduce delays and enhance emergency response, both in the underground or surface operations.

As regulatory scrutiny intensifies and technology advances, Lourens believes Africa's PDS trajectory will ultimately depend on sustained alignment.

"PDS touches compliance, mine operations, equipment design and behaviour on the ground," he concludes. "If we integrate the right technologies with the right processes and partnerships, we move closer to a future ready Zero Harm environment." ■

Continuous monitoring of employees infected with TB allows us to keep track of employees to limit the spread of the disease.

Proactively tackling mining's TB challenge

By: Dr Ntando Makatini, Business Unit Manager at Platinum Health Medical Scheme

Mining communities have typically required focused TB management, highlighting the importance of strong health programmes, regular screenings and sustained preventative care. These measures play a critical role in early detection, consistent treatment and protecting long-term community health – demonstrating that prevention works.

Mining communities have typically required focused TB management, highlighting the importance of strong health programmes, regular screenings and sustained preventative care. These measures play a critical role in early detection, consistent treatment and protecting long-term community health – demonstrating that prevention works.

The progress made in reducing TB within mining communities illustrates the practical impact of an integrated Health Maintenance Organisation (HMO) and Occupational Health model. Using the integrated model and leveraging the deep understanding of the daily realities of mineworkers, our clinic teams can appropriately and holistically respond to symptoms immediately, instead of treating issues in isolation. This means illnesses like TB are caught earlier, treatment starts sooner and families face less disruption from prolonged sickness. Over time, this practical, context-aware care has helped shift TB from being a dominant threat in mining communities to a condition that can be actively managed – protecting livelihoods, strengthening households and supporting a healthier mining industry and its communities.

Mining environments have traditionally been linked to high TB risk, for several reasons. For one, if somebody has HIV, this weakens the immune system and can create a breeding ground for opportunistic infections like TB. Furthermore, underground working environments are confined and have limited ventilation, which easily facilitates transmission of the TB bacteria.

Meanwhile, long-term exposure to silica, platinum or coal dust can make the lungs more vulnerable, increasing the susceptibility of contracting TB, and since mineworkers generally live in high density environments, this too can accelerate the community spread of TB.

TB is a high-risk disease which can have a major impact for medical schemes, if it is not controlled and the correct preventative measures are not in place. Therefore, we need to play our part to ensure that all staff are screened effectively, employees who are at risk of contracting TB are identified and treated early and that they continuously monitor the progress of the treatment.

Mining operations work closely with us in our efforts, as they benefit too – these programmes reduce absenteeism, help increase productivity, and ensure that the mineworkers are healthy and safe in the workplace.

Screening plays a crucial role as a frontline defence in

Mining environments have traditionally been linked to high TB risk.

TB is a high-risk disease that can have a major impact for medical schemes, if it is not controlled and the correct preventative measures are not in place.

the management of TB. This includes using screening tools to interrogate the symptoms associated with TB; taking chest X-rays and spirometry assessments during a mandatory annual medical surveillance programme and continuous health promotion to the employees, to help them understand and identify symptoms early. It also encourages screening during all consultations at its clinics.

Continuous monitoring of employees infected with TB allows us to keep track of employees to limit the spread of the disease.

We've taken a proactive approach in managing the risk factors associated with TB, implementing an aggressive anti-retroviral therapy programme, for effective and successful management of HIV. We also work closely with the mines to ensure that dust exposures are minimised and that there are sufficient controls to improve the ventilations underground.

We don't manage TB in silos. It's woven together in Occupational Health, which looks at everything from fitness to work assessments to the tracing of employees who may be exposed. Occupational clinics serve as primary healthcare sites where medication and treatment are standardised across all our clinics.

We ensure effective chronic disease management, to prevent the weakening of immune systems and reduce the potential for contracting opportunistic diseases. We also focus on health education, which is integrated into both Occupational Health and Primary Healthcare, to improve awareness and eradicate any stigma.

> **Long-term exposure to silica, platinum or coal dust can make the lungs more vulnerable, increasing the susceptibility of contracting TB. And since mineworkers generally live in high density environments, this too can accelerate the community spread of TB.**

Our approach to TB is a well-integrated and holistic approach that encompasses the involvement of all stakeholders. This includes the monitoring of workplace exposures; the risk assessments associated with limiting these exposures; and the diagnosis and further treatment, as well as monitoring the employee.

We are proud of the successes, but we continue to look ahead and are always studying what's new in this arena and working closely with other agencies that operate within the mining communities to constantly improve education around this topic.

Ultimately, our goal is to decrease the TB incidence rate every year, over the entire mining work force, ideally by at least 10% year-on-year. And while we aim to achieve the Minerals Council of SA's target of lowering mining sector TB rates below that of the national rate by 2034, we remain focused on affecting consistent year-on-year reductions through our work with all other stakeholders in this critical environment. ■

Strengthening mining value chains to maximise Africa's mineral resources

By: Seelan Gobalsamy, CEO of the Omnia Group

With global investment in Africa's mining sector having dipped in recent years, industry players, governments and communities must work together to restore investor confidence in a region with massive mineral potential.

This year's Mining Indaba once again reinforced for BME that successful mining in Africa increasingly depends on the quality of technology providers and supply partners.

One of the clearest messages from this year's Investing in African Mining Indaba was that Africa's mining challenge is no longer about resource availability but rather about execution.

While the continent has abundant reserves, capital follows certainty, aligned infrastructure and credible partners – which form the pillars of effective execution. What stood out for us particularly at the Indaba is that mining strategies that are disconnected from infrastructure realities are becoming unviable. Where energy, rail, ports and industrial zones are aligned, mining and beneficiation follow. Where they are not, value continues to leak offshore.

This is the context in which we understand our role as BME, a division of the Omnia Group. Through our growing presence in Africa – where we supply high-quality, precision blasting and metallurgical solutions – we help to enable this critical alignment. We do this by combining technical capability, local presence and long-term partnerships that support sustainable mining outcomes across the continent.

BME's evolving role

We believe mining in Africa is moving away from a volume-driven growth model to one focused on quality, resilience and integrated value chains. By offering the same high level of blast quality anywhere in Africa, we help customers drive down production unit costs with our customised solutions. Strong supply chains – ensuring streamlined mining operations – are also a vital aspect of the relationships we have built as a strategic partner to our African mining customers.

Our embracing of new technology applications, including artificial intelligence, means that we are driving more collaboration with technology companies. This is positioning the company to support customers' efforts to better control and monitor their blasting and mineral processing activities.

Customers' strategic partnerships with BME also contribute to their environmental, social, and governance (ESG) goals,

BME's delegation at the 2026 Investing in African Mining Indaba.

BME's stand at the Mining Indaba.

enabling mining houses to meet greenhouse gas (GHG) reduction targets and to ensure the safety of communities' water supplies.

Partnering for success

This year's Mining Indaba once again reinforced for us that successful mining in Africa increasingly depends on the quality of technology providers and supply partners. This applies at all points in a project's lifecycle. In so many of the discussions in which we participated, the message was the same: poorly structured or purely transactional partnerships are a source of risk.

On the other hand, carefully chosen long-term partnerships with the right companies offer miners a competitive advantage. As this message becomes more effectively adopted, it moves the industry away from short-term, asset-centric thinking towards integrated, outcome-driven collaboration.

Another takeaway was that, rather than focusing on individual disciplines, many of the discussions centred on how mining majors are managing overall execution risk. Mining companies are backing partners, technologies and operating models that improve predictability, reliability and cost control. This is certainly borne out by our experience in Africa, where our steady growth has been based on how we consistently deliver these benefits.

Generating shared value

It was clear from most of the Indaba speakers and sessions that the diversity, complexity and expanse of Africa's mineral wealth requires better collaboration from all parties. There is general acceptance that the sector is expected to mine the continent's resources responsibly, and to manage them equitably and sustainably. This in turn will protect the interests of the continent so that it derives maximum benefit and value from what is rightfully its own.

South Africa's Minister of Minerals and Petroleum Resources, Gwede Mantashe, spoke during the Indaba about licencing bottlenecks and the slow pace of finalising the new mining cadastre. These delays were clearly impacting on investment and mining activity in the country. Infrastructure gaps in energy and logistics are further inhibiting the mining and exploration sector in South Africa, which is so critical for the growth and development of the overall mining environment.

Investors are choosing to channel their investment dollars into jurisdictions that can align resources with power, logistics and regulatory certainty. Until it establishes a reliable cadastre, for instance, South Africa will continue to lose investment to West and East Africa, whose regulatory frameworks and infrastructure are seeing significant improvement. Countries like Namibia and Botswana are also increasingly seen as stable, well-governed options for mining investors.

Stronger together

Alongside its deal-making focus, the Mining Indaba also serves as a platform for industry stakeholders to share perspectives on policy developments, capital allocation and the future direction of mining. This much is evident from the depth and maturity of discussions over recent years. The scale and diversity of participation – from governments and financiers to major miners and technology providers – have entrenched its role as the place where Africa's mining narrative is set.

This year, the 'Stronger Together' theme of the Indaba was a clarion call to miners, financiers and governments that partnerships are no longer optional – they matter far more than before and are a commercial and social imperative.

For companies operating across the mining value chain, the conference is valuable not just to understand what is happening today, but where capital and policy are moving next. ■

Tru-Trac supports reliable conveyor performance through informed maintenance planning, accurate forecasting and access to the right parts at the right time.

Supply chain discipline is key to conveyor uptime

Extended conveyor stoppages - which can cost mines dearly in lost production - are often caused by critical replacement components not being readily available to maintenance teams. For this reason, effective supply chain management for conveyor components is increasingly recognised as a frontline reliability discipline rather than simply a back-office procurement function.

David Pereira, Head of Sales at Tru-Trac.

According to David Pereira, Head of Sales at Tru-Trac, ensuring that the right spares are available when needed is fundamental to supporting uptime and production targets.

"Most mining operations depend heavily on reliable conveyor systems to keep material moving through crushing, screening, processing and shipping stages," Pereira says. "Without the correct stock on site - or quickly accessible - mines face long lead times and the high cost of expediting components when failures occur."

He explains that the causes of conveyor stoppages are often surprisingly small - a failed idler, a worn scraper blade or poor belt alignment. While larger pieces of equipment such as crushers and mills typically receive the most attention in plant maintenance planning, conveyor systems consist of numerous smaller components that can have a disproportionate impact on production when they fail.

"Among the most critical components are belt cleaning systems and scrapers," he notes. "When belts are not properly cleaned, carry-back and spillage quickly create operational and safety issues."

When belts are not kept clean, a chain reaction can occur across the entire system. Spillage, belt misalignment and excessive wear often follow, resulting in additional maintenance requirements, safety risks and increased operating costs.

However, Pereira emphasises that while holding spare parts is essential, simply stocking large quantities of components is not the solution.

"Overstocking ties up capital, increases the risk of storing obsolete parts and often results in sites holding items that do not match the equipment installed," he explains. "Instead, Tru-Trac works with mining operations to determine exactly which components should be kept on hand, based on the specific configuration and operating conditions of each conveyor system."

An effective stockholding strategy therefore

requires a detailed understanding of each site's conveyor infrastructure. Pereira explains that this typically begins with a site assessment in which Tru-Trac specialists review the configuration of the customer's conveyors, including part numbers, operating data and capacity requirements. Future production plans also need to be considered.

"Our specialists often conduct detailed belt surveys, working alongside plant personnel to identify vulnerabilities and potential failure points," he says. "These inspections usually start at the tail section of the conveyor and move systematically along the system."

During these inspections, the team evaluates belt alignment, the structural condition of the conveyor and the performance of take-up systems. Attention then shifts to the load zones, where skirting, impact beds and belt alignment are assessed, before continuing through the carrying and return sections to the head pulleys and scrapers.

Throughout this process, the team assesses component condition, belt tracking behaviour and material loading patterns; all factors that influence wear rates and maintenance requirements.

"These insights feed directly into spares planning," Pereira explains. "Factors such as component lifespan, material abrasiveness, conveyor throughput and lead times all affect the recommended minimum and maximum stock levels."

For example, scraper blades may require replacement every three to six months depending on the material being handled, while idlers may display predictable failure patterns after only several years of service.

"It is about planning ahead so that when components begin reaching the end of their life, the replacement stock is already available," he says.

Effective spares management ultimately contributes to lowering the total cost of ownership (TCO) of conveyor systems, according to Pereira who notes that the true costs of poor planning often lie in hidden factors such as downtime, labour inefficiencies, logistics costs and safety incidents.

"These broader cost implications are sometimes overlooked at operational level," he explains. "In many cases, the people selecting components are not responsible for the cost of downtime across the rest of the plant."

He notes that an hour of downtime can translate into millions of rands in lost production for a mining operation, yet decisions are sometimes made purely to achieve small capital savings on individual components.

Mining companies often invest heavily in critical plant equipment such as crushers, Pereira adds, but overlook the conveyor systems that connect them.

"You might see crusher parts being well stocked because everyone knows the plant stops if the crusher stops," he says. "Meanwhile, a single conveyor component that transfers material between processes might not receive the same attention, even though the impact of a failure is exactly the same."

To address these challenges, Tru-Trac increasingly works with mining operations through long-term partnerships that combine technical support, system audits and supply chain planning. In some cases, this includes service teams stationed on site, vendor-managed inventory arrangements or regional partnerships that enable faster access to components.

Tru-Trac recognises that effective supply chain planning is not about holding more stock, but about holding the right stock for each specific conveyor system.

Detailed conveyor assessments by Tru-Trac enable mines to identify problem areas early, forecast component wear and optimise stockholding strategies.

Pereira explains that regular forecasting also plays an important role.

"It is usually ideal to conduct forecasting on a monthly basis, with quarterly updates that look ahead six to twelve months," he says. "This allows forecasts to be continually adjusted as operating conditions change."

Operating conditions can shift significantly over time, particularly as mines move into different ore zones. Changes in ore grade or abrasiveness can alter wear rates on conveyor components, requiring adjustments to both maintenance strategies and stock levels.

"Through ongoing inspections and close communication with plant personnel, these changes can be detected early and addressed before they lead to unexpected failures," he says.

Ultimately, the objective is not to increase inventory levels but to ensure that the right components are available when they are needed.

"It is about understanding the system and planning properly," Pereira concludes. "If you have the correct stock available and maintain the conveyors proactively, you prevent breakdowns and keep production moving." ■

Next-generation Lokotrack LT400J **delivers high-output primary crushing to Africa**

Africa's mining, aggregates and construction sectors will gain a productivity and efficiency boost with the arrival of the Metso Lokotrack LT400J - now available through Pilot Crushtec.

Wayne Warren, Africa Sales Manager at Pilot Crushtec.

Charl Marais, Sales Manager at Pilot Crushtec.

The advanced high-capacity Metso LT400J marks the next generation of Metso Lokotrack EC range, according to Charl Marais, Sales Manager at Pilot Crushtec. Featuring a diesel-electric drive system, it makes operating costs even more economical.

"The LT400J is designed as a true production machine," Marais says. "It is built to run for long periods with minimal interruption, while maintaining high throughput and reliability in demanding applications."

Typical production rates range between 300 and 600 tonnes per hour, depending on application conditions, making it suitable for primary crushing circuits on mines as well as large quarrying or recycling operations. Its energy efficiency and reliability underpin longer work cycles, he explains.

The C120 jaw crusher's nip angle can be adjusted and with three nip angle adjustments linear utilisation is improved in various feed material conditions and production rates.

"This machine can operate for up to 50 hours before refuelling which reflects a significant fuel saving compared with conventional diesel-hydraulic machines," he says. "Lower fuel consumption of course also directly reduces operating costs."

Operational economy is further enhanced by flexibility in power sourcing, as operators have the option to connect directly to grid electricity, reducing fuel usage and emissions even further.

Wayne Warren, Africa Sales Manager at Pilot Crushtec, notes that having all the main process functions electrically driven improves overall efficiency while helping to deliver more consistent performance over time.

"Electric drive systems maintain stable performance regardless of temperature variations, as there is less efficiency loss associated with hydraulic oil heating or component wear," Warren explains. "This translates directly into improved operational consistency which is a key factor in maintaining steady production rates."

A major step forward in the Lokotrack LT400J is its expanded digital control architecture, significantly enhancing usability and operational precision. Warren highlights the redesigned remote-control system as one of the most noticeable upgrades.

"The remote is no longer just a basic control unit," he explains. "It now features an LCD screen that allows the operator to see machine functions in real time and make adjustments directly from where they are standing."

This reduces the need for two-person coordination during setup or adjustment; traditionally, one operator would be stationed at the machine and another on the controls. With the Metso LT400J, a single operator can monitor and manage key functions more safely and efficiently. The interface is also more intuitive, aligning well with younger operators accustomed to digital devices and touch-based navigation.

Marais adds that the machine's intelligent remote monitoring systems incorporates more sensors than previous models.

"There is a higher level of feedback from the machine," he says. "That allows operators to adjust parameters such as crusher settings and conveyor positions without physically intervening which is a significant time-saver and an added safety benefit."

Assembly of the headgear centre columns progresses as key structural elements are positioned on site.

The control panel of the Metso Lokotrack LT400J integrates advanced IC process automation, enabling operators to monitor key parameters and adjust crusher settings for consistent, efficient production.

The digital controls support improved production consistency and preventative maintenance by providing clearer operational data and system status information. Customers can respond more rapidly and conduct quicker troubleshooting, reducing unnecessary stoppages and limiting downtime.

The significant technological advances in the LT400J – in terms of software, sensors and control philosophy – call for a high level of technical understanding for both operation and maintenance. Typical customers are therefore expected to be sophisticated operators with the necessary skills and resources.

"Our strategic relationship with Metso ensures that Pilot Crushtec continuously develops its aftersales support, training and technical readiness for new technologies," Warren says. "We invest in ensuring that both our teams and our customers are equipped to manage the advanced digital and electrical systems on the crushing solutions we provide."

For the arrival of the Metso LT400J in South Africa, two senior Metso master technicians, including one from the factory where it was built, were hosted at Pilot Crushtec's Jet Park facility to conduct in-depth training sessions with the local technical and workshop teams.

"Working directly with the factory specialists allows our technicians to fully understand the machine, its capabilities and its complexities," he says. "With any new generation machine, there is always an element of training."

The extended discharge conveyor offers three operating positions, improving stockpiling flexibility and maintenance access.

He emphasises that the Pilot Crushtec team is also well equipped to assist customers with upskilling their operators and maintenance teams so they can extract full value from the technology.

Marais highlights how the improvements in design impact both operation and maintenance, reflecting Metso's broader design philosophy of integrating real-world operational feedback into equipment development. He points to the redesigned extended discharge conveyor as an example.

"The discharge conveyor can operate at three different angles," he explains. "You can raise it to build a higher stockpile, lower it to feed directly into the next unit in the crushing circuit or drop it horizontally to the ground for maintenance access."

This last function is particularly significant as it allows technicians easier access to the underside of the jaw crusher – an area that often becomes difficult to inspect or service on conventional machines.

"Liner changes have also been simplified," he notes. "The LT400J incorporates dedicated lifting tools and improved access around the fixed jaw end, making the removal and replacement of wear liners safer and more efficient."

In addition, the bypass chute behind the jaw crusher is hydraulically adjustable, allowing it to move away from the service area and improve working space during maintenance. Warren adds that the machine was effectively redesigned from the ground up.

"Every aspect was reviewed and improved where it could be," he says. "There is now enhanced engine access through large gull-wing doors, for instance, providing clear unobstructed access to service components."

Combined with reduced hydraulic complexity – including a much smaller hydraulic tank used primarily for tracking and setup – these design improvements help shorten service times, reduce maintenance effort and ultimately increase machine availability in demanding African applications.

Enhancing the value of mobility in crushing, the Metso LT400J's track-mounted design allows rapid relocation within a site or between sites, enabling operators to respond quickly to changing production requirements. ■

Xylem launches DAF Solutions in South Africa

Xylem, a global water technology company focused on solving complex water challenges, recently launched its new Dissolved Air Flotation (DAF) products and services for the South African market.

In an event hosted at Xylem Africa's headquarters in Kempton Park, Johannesburg, the company unveiled its DAF equipment and services, delivering reliable wastewater treatment to key sectors such as mining, municipalities, agriculture, aquaculture, food & beverage, paper & pulp, chemical manufacturers, and pharmaceutical companies.

DAF is a critical pre-treatment and solids-separation system within broader wastewater treatment system. It can operate as a standalone solids-separation step or complement downstream biological, filtration, or reuse systems to help achieve site-specific compliance and reuse objectives. The compact and modular design enables deployment in constricted and crowded sites. Xylem also provides excellent DAF rental options that support smaller and seasonal projects.

"We are very excited to bring cutting-edge DAF solutions to our local customers. Xylem has introduced our DAF solutions to several other markets, where they have become a big hit among companies of various sizes. They appreciate the logistical benefits of DAF's compact designs and convenient deployment, supported by our expert technicians. South African organisations in the private and public sectors can now also leverage DAF to expand their choices for water treatment and recycling," says Chetan Mistry, Strategy and Marketing Manager at Xylem WSS (AMETI).

What is DAF?

Xylem's DAF systems use Hellbender™ pumps to release microscopic air bubbles that, following appropriate coagulation and flocculation, attach to suspended and destabilised colloidal particles, enabling their separation from the water phase which can be skimmed away.

The DAF technique efficiently removes Total Suspended Solids (TSS), Fats, Oils, and Greases (FOG), and particulate-associated biochemical oxygen demand (BOD) from wastewater streams. These systems offer an effective solution for a wide range of applications, including:

- Thickening of biosolids
- Product recovery from wastewater
- Treatment of industrial wastewater to meet site discharge limits
- Polishing of biological treatment effluent (algae and phosphorus removal)
- Pretreatment to reduce loading on downstream biological treatment systems
- Clarification of biosolids downstream of aerobic and anaerobic

treatment
- Removal of fats, oils, and greases (FOG)
- Temporary treatment of biosolids during harvest seasons
- Removal of metals and fines
- Recovery of proteins from slaughterhouse wastewater

DAF systems are also remarkably compact, often requiring significantly less footprint and depth than conventional sedimentation tanks, depending on design and loading rates. Its combination of convenient sizes and broad applications makes it attractive to numerous industries that clean water for reuse, extract materials from water, or prepare water for compliant discharge into the environment.

Bringing DAF's advantages to Africa

Xylem's DAF solutions and services enable more producers to manage wastewater strategically without excessive investment in wastewater infrastructure.

As part of a phased and modular treatment strategy, DAF is often deployed as an entry point into integrated wastewater and reuse solutions, enabling future expansion with biological treatment, filtration, and advanced polishing technologies.

Xylem's DAF units provide efficient wastewater pre-treatment and solids separation with:
- Three DAF models: RT-50, RT-100, RT-240 (100-1000 GPM flows)
- Durable stainless-steel construction
- Integrated flocculation tube for enhanced separation
- Pre-wired control panel for quick setup
- Continuous support throughout rental terms
- Simple operation following site integration, safety review, and commissioning (connection to process lines and 460VAC power required)

From running pilots and proofs of concepts for wastewater management plans, to enhancing the efficiency of established treatment systems, and upgrading to cutting-edge treatment methodologies: Xylem Africa and DAF help South African industries and municipalities solve water for all.

Xylem Africa and its partners deliver permanent and rental DAF solutions, calibrated to a customer's requirements and operations, says Mistry.

"Xylem's expert staff and our experienced partners customise each solution as required. We deliver and manage components such as mixer tanks, weir tanks, pumps, and conveyors, as well as catwalks and accessories. Our skilled technicians can support on-site staff or run the process on behalf of our customers."

Water is humanity's most essential resource. As water stress and costs increase, organisations are intensifying their strategies to ensure supply and compliance. For many, though, this prospect was out of reach because of the cost and cumbersome ownership of industrialised water treatment options.

Backed by Xylem's engineering expertise and service capability, dissolved air flotation expands flexible, resilient options for wastewater pre-treatment and reuse within integrated water management strategies. ■

Electra Mining Africa's engagements enables business growth

Electra Mining Africa brings together all levels of the capital equipment decision-making chain in one environment, making it a powerful platform for building those relationships. This unmatched ability to facilitate meaningful, face-to-face engagement positions the show as a key driver of growth across South Africa's industrial landscape.

The event connects potential clients directly with industry leaders, engineers, technical specialists and local partners, enabling side-by-side comparison of suppliers and brands. Visitors can explore equipment, technologies and solutions in one location, making it easier to assess specifications, localisation levels and support models. The show also enables detailed technical discussions around systems, components, automation, electrification and digital solutions, supported by case studies and expert insight. These interactions are difficult to replicate through other marketing channels and highlight the unique value of a large-scale tradeshow environment.

According to Eric Bruggeman, CEO of the South African Capital Equipment Export Council (SACEEC), South Africa exports R220-billion worth of mining technology globally each year, with export activity often increasing in the 6–12 months following Electra Mining Africa. This uplift is attributed to the show's ability to stimulate the market, generate qualified leads and support deal-making that feeds into the next investment cycle. "South African engineers are leaders in innovation and technology development, creating solutions for real-world industry challenges. The country's leading mining technologies will be on display at Electra Mining Africa this September," he says.

Electra Mining Africa will take place at Nasrec, Johannesburg between 7-11 September 2026. ■

Manitou: Innovative material handling solutions for mining

Manitou South Africa is a wholly owned subsidiary of Manitou Group which is headquartered in France and has a worldwide presence through establishments on every continent. As an innovative leader, Manitou Group designs, manufactures, distributes and services versatile material handling equipment for a variety of sectors such as mining, construction, agriculture and industry, amongst others. Since the invention of the first all-terrain forklift truck by the founder of Manitou, Marcel Braud, back in 1958, the search for innovation has continued to be at the origin of the great successes of the Manitou brand and continually evolves to offer a range of products that meet the needs of our markets.

With a strong commitment to innovation, reliability, and customer satisfaction, Manitou has established itself as a trusted partner for mining companies seeking efficient, safe and versatile equipment through the offering of a variety of specialised machinery tailored to the unique needs of mining. Manitou's factory-fitted mining specifications telehandlers are suitable for a variety of tasks on the mine. Coupled with specialised mining attachments such as tyre handlers, cylinder handlers, pipe handlers and personnel platforms, these telehandlers offer true versatility to the mining site. Each product is designed to withstand harsh operating conditions, ensuring maximum productivity and safety for our customers.

In addition to telehandlers, Manitou also offers a range of rough terrain forklifts, access platforms, skid steer loaders and backhoe loaders. At Manitou, customer support and service excellence is our priority. Our network of dealers provides comprehensive maintenance, training, and technical support to ensure optimal performance and minimal downtime for our clients. ■

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