

MINING

REVIEW AFRICA

AUSTRALIAN MINERS IN AFRICA RESILIENT, AS ALWAYS

P18

we are one
**Sibanye
Stillwater**

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“If you mine responsibly, you can change the destiny of a whole town.”

Marna Cloete, President, Ivanhoe Mines

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2020 marks a significant milestone achievement for Sibanye-Stillwater’s Montana, US-based PGM mining operations, the East Boulder and Stillwater mines and Columbus processing facility as it marks 20 years since the Good Neighbor Agreement was signed **P4**

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COVID-19 or NOT

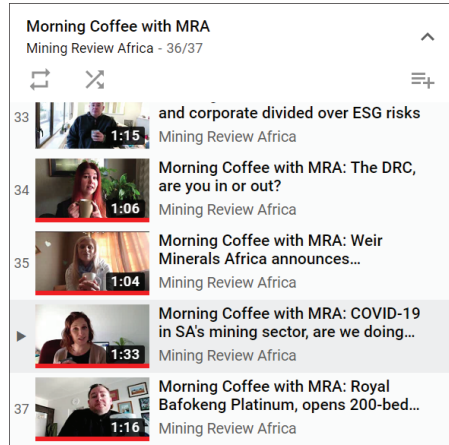
The industry, and MRA, keeps pushing on

South Africa is in its fourth month of lockdown – on Level 3 – which is somewhat better than Level 5 but it's not all good news unfortunately. The country had reported 159 333 positive COVID-19 cases on 2 July and at this rate I'm too scared to guess what that number will be by the time you read this.

If you are feeling even remotely like I do, then talking or reading about COVID-19 is becoming quite draining. Nonetheless, our world is living through unprecedented times and this drives our decisions, actions, routines and definitely our conversations.

I wonder how our mining CEOs and general managers are feeling on a daily basis. It must be hard feeling the pressure to perform financially under the circumstances, knowing that their employees are at risk of contracting the virus. As I mentioned in one of my recent coffee videos – the ability to self-distance in a cage necessary to travel underground is difficult, if not impossible.

Impressively, I find the number of reported positive COVID-19 cases in South Africa's mining sector quite refreshing (perhaps not the best choice of word but, in honesty, this is how I am feeling). As of 25 June, the Minerals Council South Africa reported only 1 795 positive cases from our mines. This is an impressive number considering we employ around 423 000 people in the sector. Nonetheless, putting yourself at risk every day must be hard – but understandable. The industry and by association the greater economy needs a



↑ The MRA team coffee videos are a must watch

fighting chance and working is what is required.

COVID-19 aside, I'm proud to say that *Mining Review Africa* has been and will continue delivering a quality product, both in print format and through our various online and social media platforms, which now include a podcast channel. You can visit our podcast

page: <https://www.miningreview.com/multimedia/podcasts/> or subscribe to our channel via Spotify or Apple Podcasts. It is yet another mechanism through which we are able to effectively deliver valuable mining-related content to you.

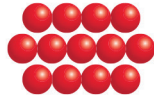
We are also finding novel ways to ensure our publication is still reaching the right audiences to guarantee reader and advertiser value. Take this edition for example – it is being digitally distributed to the AAMEG subscriber database, making it relevant to the broader Australian/African mining sector.

So for now, MRA is keeping its chin up and its hand sanitizer close by – I hope you are doing the same. Until next month, stay safe. **MRA**

Laura Cornish,
Editor-in-Chief

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Sibanye-Stillwater

Defining stakeholder engagement with the Good Neighbor Agreement in Montana

2020 marks a significant milestone achievement for Sibanye-Stillwater's Montana, US-based PGM mining operations, the East Boulder and Stillwater mines and Columbus processing facility. "This year represents 20 years since the **Good Neighbor Agreement** (GNA) was signed – representing a commitment by both the mines and their surrounding communities to work in close collaboration to ensure decisions that impact local communities and economies, as well as the environment, are made with the community groups' participation. And its success to date showcases a truly utopian environment to be a part of," **HEATHER MCDOWELL**, VP for legal, environmental, and government affairs at Sibanye-Stillwater's US PGM operations tells **LAURA CORNISH**.

Looking back

8 May 2000 marked the exact date when the legally-binding GNA contract was signed. It was negotiated between Stillwater Mining Company (now part of the Sibanye-Stillwater Group: refer to www.sibanyestillwater.com) and three community organisations: The Northern Plains Resource Council and two of its affiliate groups; the Cottonwood Resource Council; and Stillwater Protective Association.

"The GNA journey has emerged as an ultimate example of collaboration and is even more impressive considering it was born out of conflict," McDowell states. "The Stillwater mine was looking to build a new tailings facility in the 1990s, downstream from the mine. At the same time, exploration work was ongoing at what would be the East



East Boulder mine

Boulder mine. This caused upset amongst local residents who initially sought the litigation route to resolve concerns around the facilities' potential impact on the environment."

Having realised the long and arduous road litigation represented, community members reached out to the mine to resolve their concerns. "Thanks to the foresight of these community members and the mine to establish a constructive working relationship with local residents, the outcome – the GNA – was positive and determined to be in the best interest of all parties," McDowell continues.

Understanding the GNA

The GNA provides an innovative framework for the protection of the natural environment while encouraging responsible economic development. It contractually binds Sibanye-Stillwater to certain commitments and holds the mines to a higher standard than that required by federal and state regulatory processes.

Its commitments include transparent and productive interaction with the community groups, using the GNA as a vehicle for dispute resolution and positive stakeholder engagement.

Each of Sibanye-Stillwater's mine sites in the US has a Good Neighbor Oversight Committee that meets three times a year. In addition to these formal, minuted meetings, the Technology Committee and other committees meet as needed. The various groups that make up the GNA often communicate daily with company employees to address ongoing projects. Members also meet socially throughout the year.

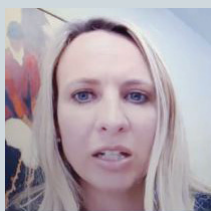
The GNA funds mining and groundwater experts who advise the group, allowing the citizens' organisations to understand the US business in enough detail to fully assess potential environmental and social impacts, and to engage in the science and technology behind Sibanye-Stillwater's US PGM operations. Such understanding enables the Group to provide feedback on the areas of permitting and mine planning in advance of formal comment periods so that permitting strategy can be adjusted to address neighbours' concerns. "Importantly, this system thereby reduces permitting delays and largely eliminates negativity during public comment periods," McDowell notes.

"And although the GNA is a legally binding contract, it has over the years evolved and has become a living collaborative document that the parties are willing to adapt as the need requires.



This approach and dedication from the parties to the GNA is so refreshing and is embodied in the spirit, passion and enthusiasm delivered by everyone involved,

HEATHER
MCDOWELL



↑ GNA Group EBR

"This approach and dedication from all stakeholders is so refreshing and is embodied in the spirit, passion and enthusiasm delivered by everyone involved. The mine wants to do right by its communities and the communities want to be a part of ensuring the mine is able to make the right decisions to grow while remaining sustainable – important considering the economic contributions the mine makes to the region and the State. Regular and rational conversations hold the key to achieving this," McDowell highlights.

McDowell is a lawyer by profession and specialises in environmental litigation. Having fulfilled this function in other industries where adversarial relationships existed with local communities, her appreciation for the "magical GNA environment" is one that comes from experience and understanding the nature of this business from a legal standpoint and how it can be a difficult and unpleasant one.

Milestones

Sibanye-Stillwater believes the agreement has accomplished its original objectives, which include minimising potential adverse impacts of its operations, establishing open communication between the parties, and ensuring the community groups have an opportunity to participate in company decisions. In the 20 years of the GNA's existence, "there has been no formal conflict, no arbitration and no environmental litigation since the agreement came into effect – a colossal achievement for any mining company," McDowell highlights.

Sibanye-Stillwater has also maintained the pristine area around which it operates – the region is home to the unspoiled waterways and natural landscapes seated below stretches of Montana's Beartooth Mountains near Yellowstone National Park.

"In an era of increased political polarisation, when the conflict and division between people with different views of the world are rarely resolved, the GNA proves that sustained cooperation is possible," says Charles Sangmeister, a member and past president of Stillwater Protective Association who lives directly across the road from mine operations.

"The agreement has ensured that our communities remain a place where people hike, fish, raft, enjoy the scenery, and, most importantly, continue to call 'home'," Sangmeister continues. "For 20 years now, we have found a way to work through our differences and protect this beautiful region we all love."

"Importantly, the GNA is only as successful as the efforts of the parties and this is evident in



every decision we make. It has given the mine and our local communities security in knowing that we can work through challenging issues,” McDowell notes.

The secret to success

Commitment from the parties has clearly been demonstrated as key to the success of the GNA, but it extends beyond this, McDowell points out. “We don’t always agree, but these challenges are good because it means the agreement is working, and that we are considering diverse views.

“Another key success factor is the amount of resources and time injected into the GNA. The people who give so tirelessly and effortlessly to the GNA, from mine and community, is essential for this to work. The support of a contract with structure and adequate resources is important, as much of the work is undertaken with volunteers,” McDowell outlines.

Paul Hawks, a rancher and member of Cottonwood Resource Council, was part of the original team who negotiated the agreement in 2000. He describes it as a model for expanding how to think about industry-community relations.

“Successful community development of natural resources goes beyond creating jobs. It recognises the other values that make a community a nice place to live and prosper,” he says.

“It seeks to give equal voice to those values throughout the planning, development, operation, and closure of that resource project. The GNA gives that voice a formal seat at the table.”

The agreement has taken work and dedication to maintain for so long, especially considering its unconventional nature. The contract has endured even as the mine has changed ownership four times in the subsequent decades. Despite the challenges, the agreement remains a working example of how ranchers, rural communities, and mining companies can work together to address local environmental and economic issues without going to court.

Group CEO of Sibanye-Stillwater Neal Froneman envisions that the principles of the GNA could be rolled out to the Group’s South African (SA) operations and comments: “The Good Neighbor Agreement is a world-leading model for harmonious co-existence between mining operations and the communities in which they operate, realising substantial mutual benefit without litigation or conflict. Given the success of the GNA in Montana, we consider that key principles of the GNA would be particularly relevant and useful in our SA operations as we attempt to rebase the trust relationship with stakeholders and build capacity to create equitable voice on issues impacting our mining communities. Social and economic compacts that yield sustainable inclusive growth in a stable operating context are essential to advance our purpose of improving lives through our mining.”

Key GNA components

As mentioned, the GNA is a constantly evolving contract – one that is being updated and revised to reflect

changes to both the Stillwater and East Boulder mines.

An adaptive management plan (AMP) is near completion which outlines a staged response to water quality parameters with certain criteria triggering various responses that are more stringent than required by state and federal law.

The AMP will be adjusted as conditions change, knowledge improves, regulatory criteria are modified or as targets change. Mitigation activities will be triggered even when levels of water contaminants are well below state and federal trigger limits. It provides a proactive method for catching potentially impacted areas much earlier than under state and federal law.

“A lot of working has recently gone into the tailings aspect of the business – a necessity as both mines will be expanding their tailings facilities, which according to Montana law requires extensive permitting on the back of extremely stringent environmental tailings legislation. Having just concluded the public comment period for one of these expansions – where only 10 comments were received in total with most of them showing positive support for the work – is indicative of how successful the GNA actually is,” McDowell states proudly.

The process to date has seen the expansion plans reviewed by an independent review panel comprising three international tailings experts and two regulatory agencies – a very large group of people that all have certain expertise. “Our GNA consultants have been heavily involved in the process and have helped to make collaboration regarding regulatory requirements a smoother process. It will likely facilitate a faster approval process.”

The GNA also includes traffic restrictions, which are frequent subjects of conversation among the parties. In 2018, a logistics co-ordinator was hired to focus on consolidating commercial loads to reduce traffic to the Stillwater mine. Sibanye-Stillwater also installed signage near one of the towns on the way to the mine to encourage motorists to reduce their travelling speeds. In addition, employees are encouraged to travel to the mine in buses provided by the organisation. **MRA**



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Marna Cloete

Ivanhoe Mines' new president takes the lead

Despite holding two key executive positions, Marna Cloete has a very hands-on approach



As the mining industry and indeed the world comes to terms with operating in 'the new normal' brought on by the COVID-19 pandemic, new **Ivanhoe Mines** president, **MARNA CLOETE**, certainly has her work cut out. However, this mining industry veteran is more than ready for the challenge, having already shown her strong business acumen in a male-dominated industry. **GERARD PETER** reports.

A registered Chartered Accountant, Cloete was appointed president of Ivanhoe Mines in March this year. She joined the TSX-listed company in July 2006 and was promoted to chief financial officer (CFO) in December 2009. She will retain this role in addition to her new duties as president.

After completing her studies at the University of Johannesburg, Cloete first cut her teeth in the mining industry

in 2002 in the Metals and Mining Division of PricewaterhouseCoopers. Its clientele included Harmony Gold Mining Company, Palabora Mining Company (a member of the Rio Tinto Group at the time) and Ingwe Collieries (a subsidiary of the Energy Coal Division of BHP Billiton). However, it must be noted that a foray into mining was not Cloete's first choice when studying but it is a decision she doesn't regret.

"Initially, I studied a BSc in Information Technology but two months

into it, I realised I had made a big mistake and changed over to a BCom degree," she starts. "After completing my studies, I applied for articles at PricewaterhouseCoopers. Here you can select three industries that you want to be involved in. My last choice was mining. But this is an industry that grows on you. It deals with all levels of society and what I love most about it is the impact that mining has on surrounding communities. If you mine responsibly, you can change the destiny of a whole town."

Straight into the thick of things

One of Cloete's biggest challenges when she became president was how Ivanhoe Mines was going to handle its onsite activities at its Kamao-Kakula copper project in the Democratic Republic of Congo (DRC) during the COVID-19 pandemic.

"With all the international borders shutting down, we had to act swiftly," she explains. "A week before President Cyril Ramaphosa announced the national lockdown, we arranged a chartered flight to the DRC and loaded as many expats that were on rotation on that flight. These individuals had to commit to spending a considerable period out of the country to keep the project on schedule. As a result, we have our senior management team and executives currently on site. It's a big sacrifice for these employees to be away from their families for such a long time and we are currently working with the South African government to allow some sort of rotation roster going forward. Thanks to the dedication and commitment of our team, we are still on track for Kamao-Kakula to commence production in Q3, 2021."

As president and CFO, Cloete needs to ensure that Ivanhoe Mines is able to meet its exploration and mining ambitions while considering its balance sheet and this is no mean feat. She believes that this can be done by looking at the end result. "Yes, you can be passionate about the geology of a project but ultimately it is a product that you are creating and you need

to be able to market that product and create an acceptable return for your shareholders."

"It's like Steve Jobs who believed in the value of the iPhone. If you believe in the fundamentals of commodities such as copper and PGM's and their future use then it is easy to be in this industry," she states.

Commenting on her dual role of CFO and president, Cloete states that both roles are equally important. She strongly believes that the company's financial health is critical for the company's preservation and financial success. However, in the wake of the COVID-19 pandemic Ivanhoe Mines needs strong leadership who will remain focused on its strategic objectives. "The two roles complement each other but you are only as strong as the team that works with you. I am fortunate to have a strong, loyal team that shares Ivanhoe Mines' vision," she adds.

Ringling in the changes

As president, Cloete has also been tasked with reorganising the company's structure with a particular emphasis on relationships with the company's stakeholders and shareholders. Just how will she go about doing this, particularly in the wake of the coronavirus?

"We have already announced a few cost-cutting measures such as closing some of our corporate offices in order to consolidate our operations," she states. "We also had a close look at our operating model and the way we want to structure our executive team going forward. As such we are looking at decentralising our leadership to be focused at project level, just like Kamao-Kakula where we have a standalone executive team."

With regards to the challenges faced by women in a male-dominated industry, Cloete says: "I have been very fortunate and have never felt that there was a glass ceiling, but I know that is not always the case for females in the mining industry. There needs to be more awareness to make this industry more appealing to women."

While she strongly advocates that more needs to be done to attract females to the mining industry, Cloete is a firm believer that you gain success through merit. "I am a firm believer that you get to where you are because of merit and not because there is a female quota to fulfil, and that anyone with drive and passion can determine their own destiny. I believe that I am where I am because of the hard work that I put in. Moreover, we should not focus on the quotas, but rather on recognising and harnessing the talent of our youth, irrespective of their gender," she concludes. **MRA**

“

We should not focus on the quotas, but rather on recognising and harnessing the talent of our youth, irrespective of their gender

MARNA CLOETE

↓ Cloete (second from right) at CITIC Metal's Strategic Investment in Ivanhoe Mines Closing Ceremony





Gold rush

Can juniors benefit from market conditions?

While many commodities, particularly battery metals, are taking a pounding amid the COVID-19 pandemic, gold continues to shine, reaching its highest price in seven years. **GERARD PETER** asked **JONATHAN BROOKS**, head of mining and metals and partner at European law firm **Fieldfisher**, if the buoyant market has created more financing opportunities for gold projects, especially for junior miners.

Earlier this year, investor confidence took a knock as tensions between the United States and Iran escalated. Market fears were further exacerbated by the onset of the COVID-19 pandemic, resulting in investors trying to safeguard their money in safe haven assets such as gold. As a result, the precious metal is enjoying its highest price in seven years, surpassing the \$1 700/oz mark* with analysts even predicting the price will

reach as high as \$1 900/oz before the end of the year. This spells good news for gold mining companies but does this renewed interest make financing a new gold project easier?

Brooks' areas of speciality include equity capital markets, mergers and acquisitions (M&A), joint ventures, alternative financing and environment and social and governance (ESG) issues.

He believes that there will be a continued interest in gold mining projects. "Gold has been of interest for

a while. This can be seen in the fact that there has been a lot of M&A activity among gold producers that stretches back a couple of years and there is certainly investor appetite for more M&A," he states.

Despite the COVID-19 pandemic, Brooks points out that gold miners in Africa are continuing to announce deals and these are being driven by the gold price. "Francophone Africa seems to be a hub for gold transactions at the moment with mid-tier Australian and Canadian



Gold has once again showed resilience as a safe haven asset.

Image credit: 123rf.com

producers leading the way in making deals and existing producers looking to replenish their reserves through M&A activity.”

However, while the gold sector is buoyant, Brooks believes that this is more advantageous for some companies than others, particularly in the junior mining space. As such, securing finance is still a big challenge for those companies who are still in the exploration phase and those trying to move through the development phase to raise finance to get their mines built.

Options for juniors

However, it's not all gloom for juniors, Brooks states, explaining that there is still an appetite for these projects. “There is a variety of financing opportunities for those juniors who have attractive projects. These options range from traditional project financing to alternative financing models that are becoming ever more popular. Private equity funds, royalty companies and metals traders are now all offering a variety of alternative financing options,” he explains.

Alternative funding for gold miners in, or near, production includes streaming agreements, a concept that originated in North America. In addition, there are royalty companies such as Osisko Gold Royalties in Canada and Anglo Pacific Group in London who are willing to fund gold projects.

“There are also pre-pay arrangements provided by mining private equity funds or metals traders,” Brooks adds. “Companies such as Glencore, Trafigura and Traxys will advance money upfront in return for an offtake agreement to purchase future gold production at a discounted rate.”

Social licence increasingly important

Whether a junior is trying to secure finance through traditional or alternative funders, Brooks advises that there are a few key important factors to consider to make a project attractive to investors.

“The first thing an investor will look at is how much money needs to be invested and what hurdles need to be overcome in order to get into production and generate cash flow. These hurdles include permitting requirements, community resettlements, political risks and any agreements that need to be put in place at national and local government levels. There are also the technical aspects in terms of how the mine will operate and any metallurgical challenges. “Also, I believe it is inevitable that those African countries who are suffering from the consequences of the coronavirus and the global economic contraction

will be analysing their revenue sources. This may lead to an increase in royalties, taxes or a combination of the two for gold mining companies,” he explains.

Furthermore, Brooks emphasises that ESG factors are becoming ever more relevant for investors, particularly the social aspect. “Developing a social licence to operate is important. Investors, consultancy firms and rating agencies are focusing very closely on ESG, looking at the social impact of mining and how communities benefit from the mines.”

He adds that ESG will become even more important once the COVID-19 pandemic is over and countries try to kick-start their economies again. “Research confirms that those mining companies that pay more than lip service to ESG and embed it in their company culture attract more investment attention than those that give it less attention.”

However, it is not just the attractiveness of a gold project that draws investment attention; the company's leadership team is equally important. “If you have a CEO or a senior manager with a good track record, who has overcome obstacles and made money for investors in the past, this is highly attractive for investors. Unfortunately, this is where some juniors fall short. While they may have a good management team, they don't have a track record and so investors may be reluctant to fund them,” Brooks explains.

Also, Fieldfisher's experience shows that having a well-connected local CEO or senior manager based in the host country makes a massive difference. This is because they understand the local culture and can negotiate with governments on issues that could be a challenge for expat management teams.

Size matters

Finally, Brooks advises that juniors should relook at how they want to present their projects to investors. “Since 2012, there has been a paradigm shift that bigger is not necessarily better. Juniors should look at refocusing their feasibility studies and plan to develop a mine requiring a smaller investment with more manageable challenges to overcome to ensure that cash flow can be generated and investors paid off within a shorter timeframe.

“The plan should also have exploration upside to further develop a project. You need to be able to show investors that you have a well-defined and quantifiable route to guarantee a ROI in a realistic timeframe,” he concludes. **M&A**

**At the time of going to print, the gold price was \$1 768*

“

Private equity funds, royalty companies and metals traders are now all offering a variety of alternative financing options,

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JONATHAN BROOKS



When mines close

Creating options

Mine closure has often led to mass job losses and associated socio-economic challenges, but better engagement and planning can help to put employees on a stronger footing so they can transition into other livelihoods.

According to Jessica Edwards, senior social scientist at SRK Consulting, many mines struggle with finding a practical starting point to initiating effective strategies. Indeed, many consider that their role ends with the payment of a retrenchment package.

"It is not uncommon for retrenchment pay-outs to be quickly squandered due to financial illiteracy and poor financial planning," says Edwards. "Structuring these pay-outs so that employees are incentivised to withdraw less up-front and delay withdrawals over time is a valuable idea."

The issue of personal debt is often overlooked, for instance, but poses a significant threat to workers' livelihoods after retrenchment. While earning a regular income, mineworkers in South Africa often take on overwhelming levels of debt – and it is common for retrenchment packages to disappear into debt repayments.

"Closure planning could therefore consider debt counselling well in advance of closure, allied with broader financial management training," she notes. "This can help employees improve their personal financial position in the years leading up to closure, making them more resilient after the inevitable retrenchments take place."

Mines can also create opportunities for how those retrenchment packages are invested. Mine closure plans will include alternative land use strategies, among which have been income-generating ventures like renewable energy projects. Employees can be offered the option to invest part of their packages in these enterprises, which can deliver long-term value as



A skills audit among employees is a useful baseline to inform mine strategies and decisions

an investment. There is also a broader range of skills development measures that mines can consider. A primary consideration is the timing, she adds, as effective closure planning cannot be done at the last minute.

"Equipping employees for viable employment or entrepreneurial options after mine closure generally takes years, rather than months," she states. "There are resources within the business which can be leveraged over time, to be invested in skills development and preparation for alternative livelihoods."

While mines generally invest in training that feeds into the direct needs of the business, the skills development imperatives for social closure must be broader. Employees can also be encouraged to take up this training by being given time during working hours. With the funding resources available through the mine's skills development levy – as well as human resources allocations in the Social and Labour Plan – workers can be trained in a range of skills. These skills, such as computer literacy, could be relevant to mining, but could equally be applicable in completely different industries.

"Early engagement with employees and their trade unions is a vital part of the

process to address the social impact of closure," Edwards points out. "Finding out what preferences and options they have is an important starting point."

A skills audit among employees is a useful baseline to inform mine strategies and decisions, and can help to identify the right training opportunities for improving future employment prospects. This goes hand-in-hand with building a closer and ongoing relationship with employees to encourage their ideas and feedback for the future.

"In our experience, many workers want to stay in the mining industry – so the assistance they need may require some engagement between the mines in the vicinity to identify future opportunities," she highlights. In a project in central Asia, many employees wanted to learn English; allowing them to look beyond the country's borders in considering jobs at other mines. In mining regions such as South Africa's platinum or coal mining areas, employees could be registered on an unemployment database – to be shared between nearby mines for mutual benefit.

"Alternatively, it may be possible for some skills or trades to be deployed in other sectors, and mines could help with guidance on this." Identifying potential for employment in these sectors is one



← **Jessica Edwards,**
Senior Social
Scientist



→ **Adel Malebana,**
Senior Social
Scientist



← **Ashleigh
Maritz,** Senior
Environmental
Consultant



→ **Lisl Fair, Principal
Consultant and
Social Sciences**

avenue, but there is also scope to partner with government agencies that support small businesses locally. This could assist employees to start up their own income-generating initiatives after retrenchment, or could generally build the capacity of local enterprises to absorb retrenched workers.

A useful foundation for engaging with employees is a social transitioning communication plan, which mines can develop to prepare employees to adjust to the idea of closure. This provides an important channel for suggestions and input that help identify and prioritise needs.

"Mines can then better communicate their retrenchment policies and procedures, so that each worker has clarity on what they are likely to qualify for on closure," Edwards outlines. "Getting closer to employees' concerns and aspirations is valuable when designing initiatives."

She reiterates that effective social transitioning through mine closure demands time and resources, and should be seen as a vital aspect of mitigating the potentially devastating social impacts of mine closure. **MRA**

EXPLORING 'SOCIAL CLOSURE' OF MINES

All mines will close, and this closure has a profound and often devastating impact on surrounding communities and towns. It is accepted that responsible mines have a central role to play in mitigating this impact, by helping improve the resilience of local economies in the face of mine closure. But how to facilitate such a 'social transition' away from dependence on mining is a complex question.

This article is the fourth in a series of five, in which experts from SRK Consulting share experience, lessons and insights that contribute to resolving this inevitable challenge. This article focuses on how mine employees can be launched into new avenues outside of direct mine employment. By way of context, the first article in this series argued that sustainable social transitioning begins with a paradigm shift in corporate thinking – moving away from seeing communities as beneficiaries and rather appreciating the assets that exist in the community as resources for building sustainability. The second article considered what this means in practical terms, with a focus on some of the lessons learnt by mines in helping create self-sustainable community projects.

The third article highlighted the importance of economic diversification in the local economy of a mine – and how mines can promote such diversification through the way they manage their supply chains and other resources. In the fifth and final article in the series, the experts tackle the conundrum of how a mine should engage transparently with community stakeholders about mine closure.



Making Sure Your Team
Gets Home Safely
Tonight

Mining companies need to be able to mitigate all of the risks to their operational and social environment as much as reasonably practical

Mine tailings

How to effectively manage the risk

Image: 123rf.com

By Simon Barry, lead consultant: risk and standards, The Advisory Group

Recent disasters such as Vale's Brumadinho tailings dam collapse in Brazil have focused attention on the mining industry like never before. By charging the CEO of Vale with 250 counts of murder, the Brazilian government has directly challenged mining companies both to reduce the risks from their operations, and to be seen to do so. They are not alone. There is also a significant effect on how investment and raising capital will be viewed in the future.

The mood music of this year's Mining Indaba in Cape Town was clearly tailings management and environmental, social, and governance (ESG), with much activity in the institutional and consultancy space directed towards these areas. These institutions include The International Council on Mining and Metals (ICMM) with its Global Tailings Review, and the Southern African Institute of Mining and Metallurgy (SAIMM), which has convened its own tailings oversight committee. Moreover, there are an increasing number of technical solutions being offered to address the 'tailings problem'.

However, this approach often focuses on tailings as an isolated problem, rather than approaching it in the overall context of managing water and associated risks – using a proper risk-based approach.

The requirement – the why?

Simply put, a mine needs to be able

to mitigate all of the risks to its operational and social environment as much as reasonably practical. This is most efficiently done by applying the risk-based approach that follows the guidelines set in ISO 31000 and using other relevant ISO standards as appropriate. In addition to this, there are a number of other risk guidelines that are increasingly required, such as the Equator Principles and the International Finance Corporation's Performance Standards. It is worth noting that the guiding principle of ISO 31000 is 'the creation and protection of value'. It should not be viewed as just an onerous process, but rather something that is worth following for its own sake.

The key element of any risk management is real-time situational awareness based upon ground truth and the ability to influence an outcome, in order to reduce that risk. This situational awareness is critical in risk management, but it is also very useful in

routine operational management. Failure to take care of the environment and the community can affect a company's social licence to operate. Failure to exercise good governance can affect both the legal licence to operate and relationships with shareholders and providers of capital. Governments, communities and investors want to see transparency and proof of good practice and risk reduction.

The approach – the how?

There are choices, and the development of new technologies makes them broader. One approach is to look at a narrow area of what may be considered as the pressing issue; the other is to take a holistic approach and work towards an integrated solution that is cost effective and adds value. This article argues for the latter.

Most tailings disasters are actually ESG disasters. The consequences for the operator have been shown above and to them can be added: legal action against

those responsible; and also increased difficulty in raising capital through institutions that are starting to demand transparent compliance with ethical standards, and evidence that it is taking place on a continuous basis – again strengthening the requirement for ground truth.

The Risk Management approach coordinates activity to determine and implement controls to reduce or remove the full range of risks. They are often connected, so a silo type approach is usually going to be inefficient in terms of both cost and process.

The process – the detail

The first step is identifying the real risks and compiling a comprehensive risk register. This is where ‘context’ comes in and it has to be applied to each operation, and cover it comprehensively. It is this process that must be owned by the operation because the risks are theirs. From the evaluation of each risk in context comes the identification of those critical information requirements that will enable an informed solution to be defined, a process to be established and the whole process line to be owned by the most appropriate person in management. Regular

“

Tailings should actually be addressed as part of overall water management, as water is the major risk to mining operations beyond just tailings.”

SIMON BARRY

review and oversight are the critical elements once an effective system has been instituted.

The integrated approach

Tailings should actually be addressed as part of overall water management, as water is the major risk to mining operations beyond just tailings. It requires effective management just to make the operation work cost-effectively.

While the tailings risk is unlikely to affect the actual mining effort, a collapsed tailings dam can destroy the mine’s value as well as a company’s reputation and licence to operate. Rather than look at tailings in isolation it actually makes more sense to include it as part of water management. The process is similar as the information requirements will differ in terms of what needs to be collected, but the processing of the data can be rationalised across a comprehensive system.

Artificial Intelligence and Robotics

These technologies are game changers and make an integrated risk approach easier to achieve. They have the ability to both enhance resilience and manage and act upon data more



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efficiently than humans. Digital workers can automate many of the tasks and conduct activities, which includes making decisions and escalating issues, where these are rules based – ‘if the data says this then do that’. The bots can send alerts to the human operator for them to action. Artificial intelligence (AI) means many things. In the case of mines, AI (machine learning) can process data to learn things, make predictions, spot trends and tell whoever needs to know details that may not be apparent based on their experience/ intuition alone.

A single digital operations room can monitor activities for any number of mines, providing a reliable, resilient and low cost service (the bots will always turn-up, work 24x7, do not get tired or sloppy, are accurate and do not act malevolently) that works remotely and very cost-effectively to support any mining operation, anywhere.

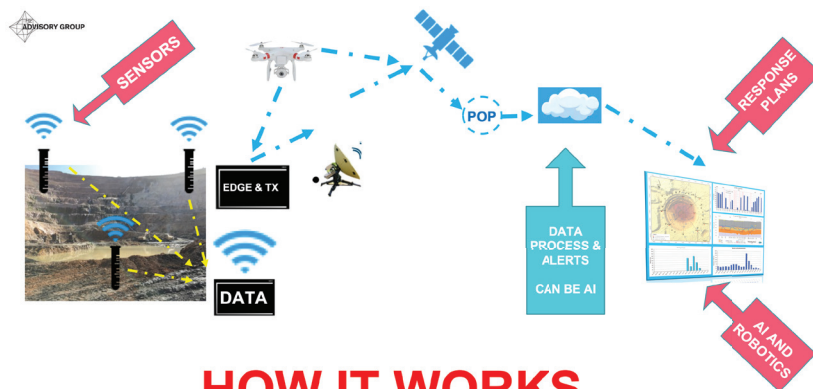
One possible solution

An open pit mine in sub-Saharan Africa is operating in a jurisdiction where relations are tense, there is artisanal mining and water is always an issue. The tailings dam seems sound for the moment but may become an issue in the years to come. Communities live downstream from both the pit and tailings dam, and allegations of pollution are routine. Such a pit is shown below:



An open pit mine in sub-Saharan Africa

The risk register process raises the requirement for information about water, and associated geology, from various sources. For the pit, the requirement is to know when failure may occur in time to take preventative action, through the measurement of pore pressure. Pore



HOW IT WORKS

pressure monitoring is an accurate method to measure the weight of water in a slope and enables early intervention to delay or prevent failure. Sensors exist to detect this. For the tailings dam the requirement could be warning of movement in any of the X, Y or Z axes (it could also be pore pressure if desired). All these sensors collect data, which must be processed in order to produce an effect. This effect can be a validated procedure executed by a trained human, or an automated response from a robot. The connectivity is shown above.

Value add

The process outlined above can be enhanced and adapted to include the sensing of, and action on, any risk related information requirements. Its resilience can be verified by robotic oversight that will provide confidence in its reliability. The system would also be structured to remove any single point of failure. Operations can be monitored in real-time at board level on the other side of the world. In addition, more routine aspects of efficient management such as environmental air and water quality, personnel on site, HSE and security can be monitored using this system. In the above example, it would enable oversight of the artisanal miners and compliance with ESG concerns in a verifiable way.

In conclusion

An integrated risk-based approach, following well-established international guidelines, can follow the principle of ‘the creation and protection of value’ through an effective process of risk management. That process

can also address ESG issues and provide credible transparency to all key stakeholders, regardless of location. Finally, the potential afforded by AI and Robotics enhances the resilience of such a system. **MRA**

ABOUT THE AUTHOR

Barry holds an MSc in Risk Management from the University of Leicester, is a specialist member of the UK Institute of Risk Management and is a ISO 9001 lead a uditor. He has worked in mining and associated activities across sub-Saharan Africa since 2008, as well as in a number of high-risk locations. With extensive experience in aviation, logistics and management development, he is a firm proponent of the team-based integrated approach to problem solving, addressing the hard questions early. Prior to 2004 he spent 32 years in the British Army’s Parachute Regiment where he operated in many demanding roles worldwide, within a variety of cultures and environments.



June 2020

Top 5 trending stories on miningreview.com



The impact of COVID-19 on South Africa's economy

Minister Ebrahim Patel addressed a meeting of about

100 CEOs where he stated that the **COVID-19** pandemic is likely to have a devastating effect on the economy, though the extent of the damage is not yet clear; many firms in South Africa are stressed as a result of the current circumstances and millions of workers are without an income.



How to apply for a Mining Permit in South Africa

For details of the documents and authorisations

we recommend using the QR code above to view exactly what is required for the application of a **Mining Permit in South Africa**.



Lesetlheng Community buries hatchet with Pilanesburg Platinum

Since Pilanesberg

Platinum Mine (PPM) acquired mining rights over the farm Wilgespruit, the Lesetlheng Land Committee (LLC) has engaged in a longstanding dispute and many court battles. The LLC represents several people descended from the 13 clans that bought the Wilgespruit property 100 years ago. On 8 June 2020, the LLC finally **granted access rights to PPM to the mining right area** by signing a Reinstatement and First Addendum to the Settlement Agreement.



The DRC should become the largest mining economy in Africa

Investment

appetite in the resources sector is low which means that only the best investment jurisdictions, like the Democratic Republic of Congo, will receive much needed investment for growth.



Endeavour Mining and SEMAFO create gold powerhouse

Endeavour Mining and SEMAFO

have begun the process of joining forces to create **West Africa's largest gold producer**. The gold producers entered into a definitive agreement in March 2020, which will see Endeavour acquire all the issued and outstanding securities of SEMAFO. **MRA**



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Australian miners



The measurement and reporting of environmental, social and governance factors is gaining momentum with investors worldwide

Leading the pack on ESG in Africa

By **Bill Witham, CEO, Australia-Africa Minerals and Energy Group (AAMEG)**

Over the past few months, despite witnessing strained supply chains, some government-mandated shutdowns and huge reduction in international travel, Australian metals and minerals companies operating in Africa have largely escaped the immediate impact of the COVID-19 crisis.

And while financial markets have largely bounced back and the reintroduction of international travel will restore both supply chains and the movement of workers, what will stay in place long after the pandemic is eradicated is a shift in global business culture.

The crisis has in many ways highlighted that the world has become much more of an interconnected network, where people, planet and the economy are intrinsically linked. It has also brought about renewed focus on good governance, as we ask the question: "When times get tough, will companies do the right thing?"

If AAMEG's members' response to COVID-19 in Africa is anything to go by, the answer is a resounding yes. A number of explorers and miners have donated millions of dollars to combat the pandemic in West Africa.

Drawing on their vast procurement and logistical expertise, our members have provided both direct financial support and medical supplies, including large tents for testing and treating patients, COVID-19 testing kits, medical masks, gloves and other essential personal protective equipment (PPE), as well as clean water, soap and hand sanitiser stations.

The supplies are being provided to hospitals, medical clinics and communities surrounding

the companies' mining operations, as well as central facilities.

Of course, this isn't just a one-off display of social cohesion, but an ongoing and essential part of their operational strategy and meaningful contribution to civil society in host communities.

Beyond supplying the metals and minerals we all rely on for modern life, the industry is vital for the economic health of resource-rich and resource-dependent countries and also plays an important role in catalysing social development through job creation and community programmes.

The focus on environmental, social and governance (ESG) issues is only likely to intensify in the coming months, as concerns around climate change, wealth inequality and biodiversity are magnified through a post-pandemic lens.

And as the resources sector fires up once again, governments, investors and consumers will be watching to gauge their next move – with a continued focus on changing the energy mix to include new technologies and materials as well as helping eradicate corruption and protect human rights.

What's more, the measurement and reporting of ESG factors, which help investors, NGOs and governments evaluate and compare a company's environmental, social and governance performance alongside traditional financial metrics, is gaining momentum with investors worldwide.



The focus on ESG issues is only likely to intensify in the coming months, as concerns around climate change, wealth inequality and biodiversity are magnified through a post-pandemic lens

BILL WITHAM

“Prior to this crisis there was a meaningful and increasing focus on ESG investing,” Goldman Sachs said in a recent note to clients. “And it is likely that this focus will only increase following the coronavirus.”

Indeed, Chicago-based financial services firm Morningstar found that sustainable funds attracted record inflows in the first quarter, even as the pandemic rattled worldwide markets.

This trend is mirrored in Australia, where fund researcher Rainmaker showed sustainable funds have returned on average 1% more than their counterparts during the quarter ended 30 March, and four of the top-five balanced personal options were ESG funds over the last twelve months.

Considering these factors, AAMEG believes that now is a more important time than ever to foster a greater understanding of ESG, and as such we’ve convened a new ESG Forum.

The forum’s mandate is to advise our members on best practice strategies for balancing stakeholder returns with sustainable long-term investment and ESG principles. We’ve conducted a survey to ascertain the greatest areas of need and interest across the industry, and will be holding regular professional development workshops and talks to guide and equip our members in this regard.

Our second annual AAMEG Africa Awards, taking place in November as part of the Africa Down Under conference in Perth, will again recognise organisations that champion a transparent, equitable and mutually beneficial mineral resources industry in Africa.

We welcome nominations from mining companies who aspire to enable the local communities surrounding their operations to be engaged meaningfully to reach their full potential, as well as contribute more broadly to the host country’s socio-economic development and sustainable growth. [MRA](#)

ABOUT THE AUTHOR

Bill Witham has held senior executive roles across the Australian and African resources sector for over two decades and has worked directly in Namibia, Botswana, Cameroon, Congo, Gabon, Egypt, Niger and South Africa. He has further experience in member-based organisation leadership, including with the Chamber of Minerals & Energy WA (Government Relations and Policy), National Party WA (Corporate Director) and South Coast Natural Resource Management Inc. (Chair). He brings an exceptional pedigree to the role, spanning corporate leadership in resource development in Africa, senior roles in resource sector representative bodies and direct experience in Government lobbying and negotiating at the State and Federal levels. Witham holds a Bachelor of Science degree from the University of Western Australia with honours in Geology.



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Sandfire Resources

Pushing T3 for development start-up – with speed

The under-explored **Kalahari Copperbelt**, which stretches for hundreds of kilometres through Botswana and into Namibia, is emerging as one of the hottest mining properties in Africa, and is already home to Cupric Canyon's Khoemacau copper development. Hot on its development heels is next door neighbour ASX-listed **Sandfire Resources' T3 copper/silver project** – which boasts the benefits of a large resource, with uncompromised mineralisation, MD and CEO **KARL SIMICH** tells **LAURA CORNISH**.

IN SHORT

Botswana is a key part of Sandfire's greater base metals/precious metals strategy – to become a significant producer of both metals within the next five years.





Drilling on site at T3

Sandfire had for some time been investigating global opportunities in the base metals space. In the MOD Resources' T3 project, it recognised the significant value from regional exploration already undertaken by MOD.

Negotiation led to the acquisition of MOD Resources in late 2019 – giving the company access not only to the T3 project but also to a substantial 11 700 km² land holding within the under-explored Kalahari Copperbelt.

Understanding the Sandfire Resources strategy

Under the leadership of Simich – who has developed multiple mines over the course of his career – Sandfire knows who it is as a company and exactly where it wants to be.

“Simply put, we want to be a mid-tier base and precious metals mining company – creating opportunities and delivering value in that process. Our immediate focus would be to deliver 150 000 tpa of copper within the next five years, producing against global benchmark operating costs,” says Simich.

With two copper-gold mines in Western Australia forecast to produce roughly 70 000 t of copper for the 2020 financial year, Sandfire needed to grow its portfolio to reach its production goal. With the T3 project in Botswana and the Black Butte copper project in Montana, US – both with near-term future development start-up potential – the company's strategic objectives are on track.

“We've gone through an interesting evolution of the company. We made an extraordinary discovery in Western Australia – which has been the company's mainstay for a long period of time – but we believe we have significantly more value to offer to our shareholders thanks to the capacity,

resources and credentials housed within the business that we can leverage to build a bigger business,” Simich outlines.

He shares the company's five key strategic imperatives:

1. Delivery – optimising projects that are currently operating or in development. This entails reviewing the potential to extend the mine life at Sandfire's existing underground Australian mines and developing the company's advanced mining projects in Botswana and Montana USA.
2. Establish a pathway to building a sustainable production profile. This entails buying another operating mine or another development asset – at the right time.
3. Discovery – the company is passionate about organic success. Having spent in the region of AUD\$20 million and \$40 million annually over the last five years, Simich believes in the value of exploration and the company will continue to allocate the appropriate amount of funds to continue creating value and opportunities.
4. Aligning and empowering its people through strong leadership, open communication and a global operating model that is fit for purpose. This also entails implementing the right initiatives, with the right people under the right conditions.
5. Ensuring the execution of efficient capital management. “We have a good understanding of debt and equity markets and the importance of providing returns to our shareholders while optimising returns on our balance sheet,” Simich highlights.

Understanding the potential in the region

The Kalahari Copperbelt is home to vast amounts of copper mineralisation, but remains largely under-explored – meaning the potential



The T3 project is situated within Botswana's Kalahari Copperbelt



T3 project accommodation camp



If it wasn't for COVID-19, T3 would probably already be headed for development,

KARL SIMICH



to build a copper business in the region is significant, Simich indicates.

Through the acquisition of MOD Resources, Sandfire gained access to a dominant 11 700 km² land holding in Botswana. Its recent acquisition of Kopore Metals' 6 700 km² Namibian exploration properties increased Sandfire's holding across the Kalahari Copperbelt to approximately 18 400 km².

Based on work that MOD Resources completed prior to the acquisition, the T3 project hosts a current mineral resource estimate of 60.2 Mt grading 1% copper and 14 g/t silver for 590 400 t of contained copper and 26.9 Moz of contained silver – including an ore reserve of 34.4 Mt grading 1% copper and 13.2 g/t silver for 342 700 t of contained copper and 14.6 Moz of contained silver.

"MOD Resources did a fantastic job of assembling the ground it did but was challenged in terms of money and capacity to utilise the area properly. Under the Sandfire umbrella we have eliminated those frustrations and are well positioned to move forward," Simich notes.

"And unlike Khoemacau, situated to the north east part of the Copperbelt, which has been subject to a significant amount of erosion, our ground is located in the central Copperbelt, where most of our geology has not been subject to deep erosion or oxidation thanks to an extensive near surface calcrete layer. This has preserved the favourable geological structures which host the copper mineralisation (which MOD Resources referenced as domes) and concealed the copper from discovery by previous explorers," the CEO notes.

The T3 project for example is itself a dome – and will be an open pit mine which could in the future also extend underground. Understanding the geology, its potential and the greater region is, as Simich mentioned, a key criteria of the company's strategic vision and so exploration

and evaluation of the resource is something that the business is driving hard – already.

The company is also evaluating the resource potential of the nearby (8 km) A4 dome which Sandfire believes could complement the T3 resource in terms of production. It was first discovered by MOD Resources in 2018. "We have an aggressive and extensive exploration programme looking at anomalies along the belt similar to T3 and A4, and are successfully using airborne electro-magnetics to assist with these efforts."

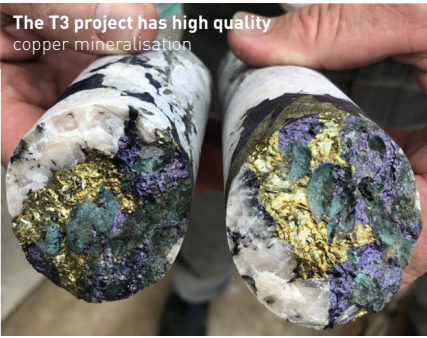
Understanding the T3 project

It's full steam ahead for the advancement of the T3 project, which unfortunately has, like most mining project developments across the globe, faced the COVID-19 hurdle. This has delayed timing around the project, but optimistically, not by a considerable amount, Simich believes.

At present, Sandfire is working to optimise the feasibility study for T3, which MOD Resources concluded in March 2019. "It is vital we have a high degree of confidence in delivering the T3 project." The company has also been evaluating how the A4 deposit could better contribute to or enhance T3's output – either immediately, or in the short-term future.

The optimised study is expected to be presented to the board in calendar Q3 from which a decision to build the mine can be made. "And while COVID-19 continues to present development challenges, we believe the government recognises the potential T3 offers the country and will work closely with us to overcome these challenges as quickly as possible." They are for example already extending grid power to within 12 km of T3.

As such, the company is confident it will secure its mining licence and environmental and social impact assessment in the coming months. With advanced discussions already



The T3 project has high quality copper mineralisation

underway to secure the necessary funding to build the project, Simich is optimistic that the project will start to move within the last quarter of this year. "If it wasn't for COVID-19, T3 would probably already be headed for development," Simich states.

Looking to the scope, timing and delivery of the project, T3 requires approximately 24 months to build

and produce first copper. According to the original feasibility study, MOD Resources outlined a 3.2 Mtpa operation producing roughly 28 000 tpa of copper for about 11 years. Sandfire is investigating the potential to increase this to within a region of between 3 and 5 Mtpa which could potentially equate to around 50 000 tpa of copper. **MRA**

ABOUT THE BLACK BUTTE COPPER PROJECT

Sandfire Resources holds an 85% interest, via TSXV-listed Sandfire Resources America, in the high-grade Black Butte copper project.

Black Butte is focused on the Johnny Lee copper deposit, which hosts a total mineral resource estimate comprising 13.6 Mt grading 2.9% copper for total contained metal of 391 000 t of copper. This makes Black Butte one of the top 10 undeveloped copper projects worldwide by grade.

Project permitting for the Black Butte Copper project was completed in April 2020, with the Montana Department of Environmental Quality releasing the final environmental impact statement on 13 March 2020 and issuing a positive record of decision to grant a mine operating permit on 9 April 2020.

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Black Rock's Mahenge graphite project

Geared for success, for all stakeholders

When ASX-listed **Black Rock Mining** set out to develop its Mahenge graphite project in Tanzania, it did so with a long-term view of creating a sustainable mine that will add significant value to the country's economy. And with a 26-year life of mine and one of largest JORC-compliant flake graphite resources globally, MD and CEO **JOHN DE VRIES** is confident that the company can deliver on its vision, he tells **GERARD PETER**.

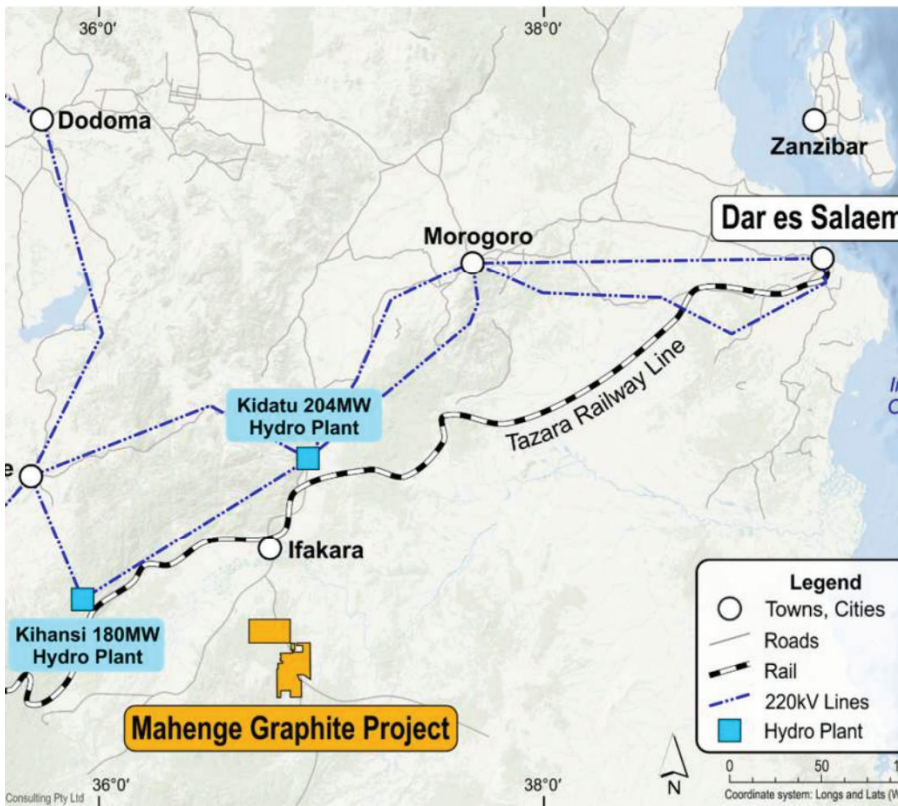
Black Rock currently has a 100% interest in Mahenge. The project is spread across 324 km² of exploration tenements in Tanzania's central Ulanga district, 450 km from the country's commercial centre, Dar es Salaam. It is one of the world's largest graphite resources

with 212 Mt at 7.8% TGC (total graphite contained), and a reserve of 70 Mt at 8.5% TGC. The company's enhanced definitive feasibility study (eDFS) projects a four-stage construction schedule to deliver up to 340 000 tpa of 98% graphite concentrate for 26 years. According to de Vries, Mahenge's high graphite concentrate is as a result of

its unique location. "Mahenge is on top of a mountain. This is unlike most graphite deposits which are found in low lying areas. These deposits experience a secondary mineralisation effect, meaning fluids pass through these ore bodies and this fluid adds in other minerals such as vanadium, sulphur and iron. We have a very dry system at Mahenge so there is minimal secondary mineralisation and this geology allows us to achieve a remarkable 98% graphite concentrate," he explains.

IN SHORT

Mahenge is looking to deliver up to 340 000 tpa of 98% graphite concentrate once all four modules of its operation are in production.



↑ Map showing the transport infrastructure that allows Black Rock to swiftly get product to Asia

Customers determine success or failure

De Vries has over 35 years' experience in the mining industry and has held several operational and strategic roles. However, despite his immense experience, he states that developing a graphite project is very different to more traditional projects such as gold and base metals. "Firstly, when the graphite boom took off about four years ago, nobody had really heard of the industrial mineral but when the electric vehicle (EV) market started taking off, everybody "charged" (no pun intended) into graphite," he explains.

"Three years later we have found that graphite is not rare; there is plenty of it. This is evident by the sheer amount of discoveries that have been made in a short period of time. What is apparent is that it is not the availability of a graphite deposit but rather the properties of the concentrate that comes off that deposit that is rare. Mahenge's clean chemistry and large flake bias places us in the very rare class"

De Vries also adds that not much is known about the ideal way to develop

a successful graphite mine. "We don't know a lot about graphite mining because there has effectively only been two projects in the Western world in the last 10 years, so there isn't a large knowledge pool about the right way to develop a graphite project. Also, the first movers in this space used the gold and base metal mentality to get them started and as it turns out, that is not the right approach.

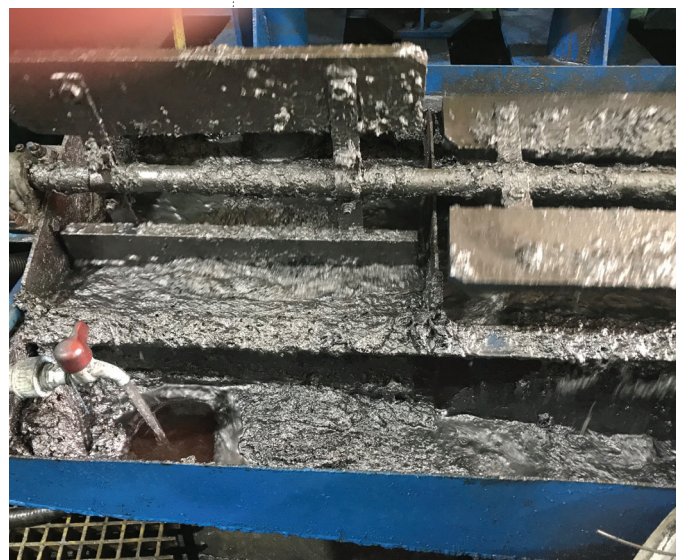
"A graphite project is different. You need more than grade, you need volume as well. Typically you need to produce a series of fairly large samples which are sent to your intended customers. They will manufacture it and hand it to their customers and this goes to

various customers all the way down the value chain. The feedback will eventually come back to us and then we adjust our settings and send another sample; you keep doing it until the sample is right. Painful at first, but once you are over the wall, the process becomes a massive barrier to entry.

"What this means from a plant design and set-up point of view, is that there is no such thing as a ramp-up in graphite production; you either make a product that meets specification on day one, or you are producing waste. It does make it challenging to develop a project this way, but if you have secured customers, you have secured your project lifeline."

Following the DFS, Black Rock ran a 90 tonne pilot plant that produced 7 tonnes of sample material which it sent to 22 potential customers, where the company garnered enough interest. "Our potential customers were surprised and didn't really believe that we were able produce 98% concentrate so they wanted to see how we did it. So, we ran a second pilot plant in China and took concentrate to a number of customers, including POSCO, a large South Korean industrial company who is a major player in the global lithium-ion industry."

The relationship between Black Rock and POSCO was further solidified in June when the two companies signed a strategic alliance and development



↑ Testing in progress

John de Vries with members of the community →



Memorandum of Understanding that will see the development of Mahenge.

According to the agreement, once Due Diligence is complete, POSCO could make an initial investment of up to US\$10 million to fund a programme of engineering works including design, completion of contracts and early site access to establish a construction-ready site by the end of the year. POSCO then has the option to make a second investment for project construction in exchange for a long-term offtake arrangement for up to 100% sub #100 mesh concentrate. This is expected to be up to 40 000 tpa at full production rates for Module One at Mahenge.

Easy route to Asia

Mahenge is about 60 km from the Ifakara Railway Station which is on the Tanzania Zambia Railway Authority (TAZARA). This is a bi-national railway linking the southern Africa regional transport

network to the seaport of Dar es Salaam. According to de Vries, Black Rock will be able to truck concentrate to a custom-built freight terminal. The concentrate will be containerised and sealed inland and put on a train which will take it to the port of Dar es Salaam. "This is a massive advantage for us. Dar es Salaam is heavily congested so to be able to load concentrate onto a train and take it directly to a wharf and onto a daily shipping service going back empty to Asia gives us a significant cost advantage and allows us to manage our working capital," he adds.

In addition, the project is about 4 km from the village of Mahenge. This means that there is a potential available workforce that is not far from site. As such, Black Rock will not have to build workers camps on site, thereby saving money and supporting local involvement through jobs and opportunities for small businesses.

De Vries is intent on ensuring sustainability at Mahenge, which will ultimately benefit the country. This includes a plan to allow Tanzanians to head up the project.

"Once all four modules of the plant are operational, we will be in position to create almost 1,000 local jobs.

"Also, Mahenge will ensure that US \$3.6 billion of value is delivered to the Tanzanian economy over its 26-year lifespan. So, sustainability is fundamental – we have to play the long game and that is to upskill the local team," he concludes. **MRA**

\$3.6 billion

Mahenge's contribution to the Tanzanian economy over its 26-year life of mine

You either make a product that meets specification or you are making waste,

JOHN DE VRIES



Mahenge's unique location has resulted in 98% graphite concentrate

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Minbos Resources

Stimulating agriculture, promoting food security, in Angola

Through its Cabinda phosphate project in Angola, ASX-listed phosphate developer **Minbos Resources** is in the early stages of building a nutrient supply and distribution business with the aim of stimulating agricultural production to promote food security within the country and the broader Congo Basin. With 44% of Angola's 30.8 million population employed in agriculture, having a locally mined, manufactured and distributed fertiliser product will have a significant impact on the central African region, whose economy and population is reliant on agriculture, CEO **LINDSAY REED** tells **CHANTELLE KOTZE**.

IN SHORT

As the global population continues to grow, Minbos is developing a project in Africa for Africa that could help promote food security in central Africa while also enhancing agricultural practices in the region.



Greenhouse trials

According to the African Development Bank, raising the productivity of agricultural enterprises through increasing crop yields has not been adequately promoted as an important food security strategy in Africa.

Apart from commercial agriculture, which covers a relatively small share of crop production compared to that of subsistence farming, the use of agricultural inputs – such as improved seeds, inorganic fertilisers, insecticides and pesticides – has been much lower in Africa than in other parts of the developing world.

Moreover, the use of agro-chemicals and/or integrated pest management techniques to deal with plant diseases and pests is still largely confined to export crops.

Minbos believes the use of agricultural inputs, such as fertilisers, can help transform agriculture into a business for many subsistence farmers in Africa and aid in reducing local food prices, enhancing current and future food security and improving Africa's economic competitiveness.

A report by the World Bank noted that quality seeds, fertilisers and agricultural equipment are out of reach for most Angolan farmers, with the unavailability of fertiliser cited as the single biggest constraint on yield growth. The other constraint on yield growth is the inability to produce a locally manufactured fertiliser, with small-medium-scale producers currently constrained by the high cost of imported fertiliser.

Echoing these sentiments, Reed notes that logistics costs and limited domestic production meant low fertiliser use in Middle Africa had resulted in crop yields that were significantly below that of other regions. He believes that producing low-cost, locally-mined, manufactured and distributed fertiliser, tailor-made for local soils, could drastically change this picture in future.

The Cabinda phosphate project has the ability to stimulate the downstream agricultural input sector to enhance food security in Angola and the greater Congo Basin going forward,

LINDSAY REED



“Producing fertilisers locally would improve the availability of nutrients, reduce transport costs and would protect against exchange rate fluctuations which impacts on fertiliser pricing,” says Reed.

Moreover, African governments are seeking to reduce reliance on imported food and NGOs are promoting the use of modern agricultural inputs such as fertilisers among subsistence and small to medium-scale farmers.

A project in Africa, for Africa

Minbos originally acquired the rights to the Cúcata deposit (which hosts the Cabinda phosphate project) in Angola through a 50:50 joint venture (JV) partnership in 2010. During this time, more than US\$20 million was invested in exploration and pre-feasibility studies to produce an export focused product. During the period, the company acquired extensive technical knowledge on phosphate projects throughout the Congo Basin.

After a failed merger by the two parties in 2016, the JV partnership was terminated in 2018 and the rights to the deposit were terminated, with the licence forfeited by the government. Despite not having any ownership interest, Minbos continued to push ahead with agronomic research and development programmes for the Cabinda project.

In June 2019, the rights to the Cúcata deposit opened to a public tender,

and following a very competitive tender, Minbos was successful in winning back the rights, which Reed believes was largely due to the agronomic research that the company has taken and continues to undertake.

According to Reed, the Cúcata deposit has the potential to produce a low-cost/high-yield fertiliser blend suitable for crops and soils within Angola and the wider Congo Basin. What makes the project unique is that the sandy-type phosphate sedimentary deposit (as opposed to hard rock-type sedimentary deposits) can be mined without blasting or ripping and beneficiated without crushing.

Minbos plans to mine phosphate rock from the Cúcata deposit and transport it to the Porto de Caio about a 60-minute drive along a dual-lane highway from the site. All the necessary electricity, gas, water and shipping infrastructure exists to build and operate a 20 tph granulation plant to produce enhanced phosphate rock granules, comprising phosphate rock and mono-ammonium phosphate (MAP).

The enhanced phosphate rock granules will become the phosphorous (P) nutrient feedstock,

FAST FACT
The global population is predicted to be around 10 billion by 2050, with worries around the amount of available land to grow the food required to support this level of population growth





↑ Field trials

which will be blended with imported nitrogen (N) and potassium (K) granules to form an NPK blend that meets the exact specifications suited to Angolan crops and soils, explains Reed.

The project is progressing quite quickly and the company is underway with the definitive feasibility study for Cabinda.

Mine planning consultancy Oreology has been appointed to generate a robust mining strategy, which includes producing an ore reserve estimate, mine schedule, stockpile design and mine infrastructure design, as well as cost modelling. This work, to be completed by August, is important for the mine approval process in Angola and will assist Minbos with its ongoing discussions around the mining investment contract with the government and will allow the company to move straight into the mining phase of the project.

Site engineering work, detailed design of the granulation plant and ordering of long lead items as well as base line environmental study surveys will begin this month and will be completed by Q1, 2021.

The Cácata deposit contains a mineral resource of 27 Mt grading at 17.7% P_2O_5 (phosphorus pentoxide) in the measured, indicated and inferred categories. This includes a higher grade 'scrub and screen'

resource of 13.1 Mt grading at 26% P_2O_5 in the measured and indicated categories – 7 Mt of which exceed 30% P_2O_5 and which will be exploited as part of the Cabinda project.

Despite being a relatively small-scale deposit, the 7 Mt of P_2O_5 is almost half a century's worth of phosphate nutrient when compared to the country's current phosphate use, explains Reed.

While the COVID-19 pandemic has been inconvenient in terms of project development, it has not impacted the project development timetable, with construction expected to start as soon as Q2, 2021. This is however dependent on the environmental approvals and the shipping of the long lead items, expected to take between 24 and 36 weeks, which remain the largest areas of uncertainty.

Unlocking Africa's agricultural potential

With fertiliser consumption on the African continent set to grow 79% by 2030, reaching 13.6 Mt by 2030 compared to 7.6 Mt currently, many international fertiliser companies have recognised the incredible growth and population trajectory of Africa. In Nigeria, Indorama has built a US\$1.5 billion fertiliser plant; OCP has built a US\$2.4 billion fertiliser plant in Ethiopia; while Toyota Tsusho has

commissioned a new large scale fertiliser blending plant in Kenya to service the Kenya and Tanzania markets.

Minbos is working in partnership with the International Fertilizer Development Centre (IFDC), one of the world's leading fertiliser research and development organisations, on developing an innovative fertiliser product that is tailored to meet the growing agricultural demand of Middle Africa.

The IFDC has identified that the Cácata phosphate rock has medium solubility and can be enhanced by the addition of a small amount of MAP to be useful as a phosphate nutrient.

Together they have successfully processed and produced over 500 kg of Cabinda phosphate rock blended with MAP, known as the Cabinda Blend, at the IFDC's trial plant in Alabama, USA, which was used in a number of in-country greenhouse and field trials.

Greenhouse trials

Four greenhouse trials with the IFDC over two years have been completed and have confirmed that the Cabinda blend returned similar agronomic performance to more expensive water-soluble phosphate imports, in crops and soils typical for Angola.

The trials demonstrated positive agronomic outcomes, including:

- A 'starter effect' boost provided by the MAP content to promote early root development and plant growth;
- An 'enhancement effect' provided by the acidity of MAP and complemented by acid soils and plant rhizosphere to stimulate the dissolution of the Cabinda phosphate rock, and
- An economic benefit, with Cabinda blend significantly cheaper than commercial water-soluble phosphate fertilisers, MAP and diammonium phosphate (DAP).

Moreover, the greenhouse trials have demonstrated the potential for the Cabinda blend to have a greater economic benefit than previously understood, with second and third crops revealing a residual effect from the initial fertiliser application – which would boost the economic potential of the Cabinda Blend.

Field trials

In-country field trials in Huambo

designed by Plant Nutrition Science and Technology (NPCT) in Brazil and co-ordinated by the Angolan Institute of Agronomic Investigations (IIA), are ongoing, the crops (maize) have been harvested and the crop yields are being weighed. The objective of this trial was to prove the effectiveness of the Cabinda blend in Angolan field conditions. Field trials for the next growing season (beans) are being planned in collaboration with NPCT, IFDC and the IIA to compare the Cabinda blend to commercially available fertilisers.

To further optimise the Cabinda blend and ensure its suitability to Angolan crops and soils, the company has again engaged the IFDC to complete an advanced greenhouse trial.

The greenhouse trials, to be undertaken at the IFDC campus in Alabama, have the

DID YOU KNOW?
The most important use of phosphate rock is in the production of phosphate fertiliser for agriculture, with over 80% of global production used in fertiliser

potential to enhance the value-in-use of the Cabinda blend and improve the project economics.

The trials have been designed to evaluate the Cabinda blend in local soils on soybean-wheat-sorghum crops grown in sequence

to maturity to test several research comparisons, including:

- Determining the residual effect of Cabinda phosphate rock on grain yield and phosphate uptake with three crops grown sequentially to maturity in the same pots;
- Estimating a minimum MAP concentration required to generate the 'starter effect'; and
- Evaluating the advantage of granulated versus tableted fertiliser product.

"Previous greenhouse and field trials have proved to be an important and independent measuring stick for

the agronomic potential of Cabinda phosphate rock," says Reed, noting that blend testing will be in the range of 75% phosphate and 25% MAP blend in a 5:1 ratio.

Future micro nutrient potential

Going forward, Minbos will consider the addition of micro nutrients to the Cabinda blend depending on the requirements of the crops in the Congo Basin. Testing will soon begin to determine the best micro nutrient requirements for the best crops. This will be followed by field trials to compare the standard Cabinda blend to the Cabinda blend with the added micro nutrients during the next growing season, Reed explains.

Despite being a relatively small project, the Cabinda project has the ability to stimulate the downstream agricultural input sector and promote food security in Angola and the greater Congo Basin now and into the future. **MRA**

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Preparing for peak NdPr performance

August 2020 marks the three-year anniversary since ASX-listed junior **Peak Resources** applied for its special mining licence (SML) for its 100% owned **Ngualla rare earths project** in Tanzania. With expectations of securing the licence in the near-term future, the company is committed to proving that the wait has been worth it. Not only is Ngualla one of the world’s largest undeveloped neodymium (Nd) & praseodymium (Pr) rare earth projects, the plan is to extract maximum value from the ore body through a separation refinery in the UK, CEO **ROCKY SMITH** tells **LAURA CORNISH**.

It comes as no surprise that Peak Resources is still waiting for its SML – Tanzania has undergone major changes to its mining regulations and this has unfortunately seen new project developments in the country come to a grinding halt.

“It has been a frustrating process but we are now, for the first time since 2017, seeing the country look at evaluating some of its regulatory changes to revitalise the mining sector – the country recognises the potential of its natural resources and wants to

IN SHORT
With an SML in place, Peak Resources’ Ngualla project will move forward into the final cash raising phase necessary to move into construction – a five-year process to delivering a final NdPr product.

harness the opportunities for economic upliftment that can be gained from both the mining and oil and gas sectors. The reality however is that Tanzania has become one of the most difficult jurisdictions in which to do business in Africa, making companies’ ability to secure finance non-existent, and these circumstances simply have to change,” Smith starts.

Despite the difficulties experienced over the last few years, Smith is still optimistic and this is largely thanks to the quality of the Ngualla ore body, the

team he has currently negotiating with the government and his confidence that after three years the award of its SML is imminent. “Our understanding is that our SML is sitting with Cabinet, which is the last step in securing it.

With an SML in place, Peak Resources will look to secure funding to build Ngualla, and an associated downstream beneficiation facility. Smith anticipates this cash-raising process to take about 12 months. “Despite the delay we have a solid funding plan and we are in advanced discussions with respect to securing offtake agreements with companies in Japan, the EU and China, which we will be able to finalise once we receive the SML.”

The beauty of Ngualla

With 40 years of experience in the mining sector, and more specifically nearly four years in the position of MD for Molycorp’s Mountain Pass rare earths operation in California, Smith understands the industry. The Ngualla deposit, he says, is bigger than the well renowned Mountain Pass and contains significantly high volumes of Nd and Pr – essential components for magnets used in electric vehicles.

The deposit contains a JORC-compliant mineral resource of 214.4 Mt at 2.15% REO (rare earth oxide) and a JORC-compliant ore reserve of 18.5 Mt at 4.80% REO or 1.02% NdPr. “At the volumes we are targeting initially our project already has a 26-year lifespan and utilises just 9% of the total resource,” confirms Smith.



“On the plus side, we can say that the COVID-19 virus has over recent months assisted us in reducing our costs even further,”

ROCKY SMITH



Ngualla camp site

Demand and NdPr pricing

Analysts are forecasting NdPr demand to exceed supply by 2023 – which is expected to drive prices upwards of \$100/kg – significantly higher than the current \$40/kg at present and the \$55 – 60/kg Ngualla needs to be profitable.

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After mining the weathered cap, the company can in future tap into the large un-weathered Bastnaesite zone which offers high grade REO material and potentially another 60 to 70 years of operating lifespan.

Situated in southern Tanzania, 147 km from the city of Mbeya on the edge of the East African Rift Valley or 1 000 km from Dar es Salaam, Ngualla requires additional investment spend on supporting infrastructure – including a power plant (8 MW of HFO and 2 MW of solar power), camp, water wells and the upgrading of 45 km of road to site. This is very popular with the Tanzanian government as it views the mine as a way of boosting the local economy in the mainly subsistence farming area.

Downstream beneficiation a differentiating factor

The capital spend for the construction of Ngualla – a total of around US\$200 million – includes the delivery of a mine and processing plant to produce an REO concentrate that will be shipped to the company’s planned downstream separation refinery in the UK.

In May 2018 the company was granted planning permission to build a \$165 million refinery at the Wilton manufacturing site in the Tees Valley, in north-west England. “This is a great location with a lot of chemical and industrial manufacturing DNA. It is also large enough to accommodate our future expansion plans,” Smith reveals. The Wilton site is located within 3 km of the deep water Teesport, from which Peak Resources plans to ship the mineral concentrate from the mine in Tanzania. It is the fifth-largest in the UK by volume, with an annual cargo of 40 Mt.

The Teesside rare earth separation plant positions Peak Resources in a

50 000 tpa

The volume of NdPr the world currently consumes



↑ The Peak Resources team

unique position above its peers, who generally within the junior space are not looking to separate their material. In separating its REOs the company will profit from the increased product value upside and free itself from the Chinese dominance on processing rare earth concentrates.

The separation plant is estimated to produce 3 000 tpa of NdPr oxide product from around 32 000 tpa of concentrate, as well as 3 500 tpa of cerium carbonate, 6 000 tpa of lanthanum carbonate and

625 tpa of mid and heavy rare earth carbonate. And this is just the beginning of Smith’s vision. “Our plan is to double NdPr production to around 6 000 tpa, incorporate a magnet recycling circuit and build a heavy separation plant as well. This should be secure enough to install treating arrangements for these metals,” Smith outlines.

“Worldwide, countries are understanding the issues with sourcing too much of any critical item from China. I believe Teesside could become a new centre of excellence for rare earth separation, producing rare earths for less than China can,” he concludes. **MRA**

Developments to Tanzanian legislation

The conclusion of the Barrick Gold Corp. negotiations in January 2020, has cleared the path for the Peak Resources SML to be granted. The company has been informed that the terms of the agreement between Barrick and the Tanzanian government will form the blueprint for all future SMLs.

The granting of the pending SMLs is important to the government as they are viewed as signalling a new beginning for the country’s mining industry after the legislation changes announced in July 2017. The future will see mining companies working in partnership with the government to share equally in the economic benefits. The government is also in the process of implementing a number of additional legislative changes to further encourage investment in the country. The first piece of legislation, The Arbitration Act, was signed by the President and gazetted on 21 February 2020. The Act allows for International arbitration to take place, provided the venue for the arbitration is held in Tanzania. Further proposed legislative changes proposed to be tabled in parliament in the near future include an update to the Investment Act, and a new Business Facilitation Act (bill), which will amend a number of current acts to improve the general business environment. The Company is encouraged by the stakeholder engagement that the government has undertaken while drafting these pieces of legislation and is confident they will assist in the implementation of the Ngualla project.





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According to the Australian Parliamentary Senate Committee's report on Australia's Trade And Investment Relationships With The Countries Of Africa, dated 21 June 2018, Africa is generally acknowledged as having some 30% of the world's mineral, oil and gas reserves, and Australia's current commercial activity in Africa is strongly focused on the extractives sector.

This report further indicated that at least 170 ASX-listed mining and other resource companies are operating in some 35 African countries, with the scale of exploration, extraction and processing involving current and potential investment estimated to be worth more than A\$40 billion.

Australian companies are most active in the resources sector in South Africa, Namibia, Tanzania, Zambia and Burkina Faso.

Vibramech is one of Africa's largest manufacturers of vibrating mineral processing equipment; many of its pieces of equipment are in operation with its Australian clients. "Our current installed base of over 10 000 pieces of equipment makes us an African leader in market share. We are proud to be the preferred supplier of vibrating equipment to project houses and mines in southern Africa, and we have earned the reputation of being an OEM that designs and manufactures robust and durable screening equipment," explains MD David Massey.

Vibramech supplies its equipment primarily to the mining and mineral processing industries. Although it delivers worldwide, as a proudly African company it predominantly supplies screens throughout Africa, which is considered to be among the harshest and most aggressive environments in the world. The company has extensive experience

in gold, diamond, coal, iron ore, manganese, cobalt, platinum, chrome, nickel, uranium, copper, mineral sands and aggregate operations.

For over 40 years, Vibramech has developed a comprehensive range of vibrating screens, such as the multislope (or Banana), horizontal, inclined, double deck and dewatering. It also has a range of proven feeders, such as grizzly feeders, pan feeders, tubular feeders and grease tables. The brand is synonymous with quality, reliable and robust vibrating equipment. "Our design practice makes use of Finite Element Analysis and Strain Gauge Analysis to prove structural integrity, with detailed attention paid to wear protection and commonality of components to minimise spare parts inventories," Massey states.

Vibramech understands the harsh operating conditions which vibrating screens, grizzlies and feeders are subjected to in the mining industry, worldwide. As such, the company is cognisant that its designs need to cater for both abrasive and corrosive environments. As sound dynamic behaviour is essential to ensure vibrating equipment reliability, all equipment is built to perform within strict dynamic parameters.

All internal mating surfaces are machined in order to maintain stringent dimensional tolerances. In addition, the company's quality assurance programme makes provision for a full 3D vibration

analysis to be conducted on all equipment prior to release. This is used as a benchmark for the life of the equipment.

A significant percentage of the screens supplied are manufactured under the Siebtechnik licence which was awarded to Vibramech in 2005. In particular, Vibramech has continued to supply 4.3 m-wide screens to both local and overseas projects with numerous screens being supplied into the African market.

In addition to conventional screens, the company has supplied eight Hein-Lehmann Liwell screens to one of South Africa's major coal producers.

Vibramech is the southern African licensee for Liwell screens. These machines have been designed specifically to screen fines from a 'sticky' feed in a dry screening operation, and have a worldwide reputation for being the market leader in this field.

Vibrator motor and geared exciter repairs form part of Vibramech's service offering, with repairs conducted to OEM specifications. URAS vibrator motors and geared exciters are part of Vibramech's key product offering, which, along with other OEM vibrator motors and geared exciters, are repaired at Vibramech's 8 000 m² under crane factory. Vibramech has distributed URAS vibrator motors as part of its vibrating equipment product offering since 1981 and is the exclusive URAS vibrator motor distributor for Africa and the Middle East. [MBA](#)



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Committed to compliance

SA mining industry steadfast in its transformation journey

The **Minerals Council South Africa**'s member companies have shown substantial compliance and have made significant progress along the journey towards transforming the South African mining industry and the economy in the past decade. While the Minerals Council remains fully committed to improving the competitiveness of the mining sector by ensuring its ongoing growth, transformation and sustainability, it highlights the critical need for consistent and ongoing engagement among industry stakeholders and the Department of Minerals Resources and Energy (DMRE). **CHANTELLE KOTZE** writes.

Regular engagement will ensure the creation of workable policy frameworks with clear implementation guidelines that will secure the effective transformation of this critical economic sector in South Africa.

Promoting and enabling transformation is one of the Minerals Council's five strategic goals, aimed in part at creating an enabling policy environment for the mining sector by engaging with stakeholders on all policies that impact the sector to ensure that they are stable, competitive and predictable in order to promote investment and transformation.

The industry's most recent transformation objectives were set out in the third iteration of the Mining Charter – published in September 2018.

Taking stock of the industry's transformation

The Minerals Council commissioned a study in the first half of 2019 to assess the industry's compliance with the



Tebello Chabana

transformation objectives outlined in the 2010 Mining Charter, which was applicable until 2018.

The assessment – which focused on five of the Charter’s pillars; namely ownership, employment equity, procurement, human resources development and mine community development – found a very good level of compliance by member companies’ against the transformation obligations of the Charter.

While there were areas where compliance was exceeded – such as the level of HDSA representation across all management positions and the levels of procurement of capital goods, services and consumables – there were certain areas where average compliance did not meet the 2010 Charter targets.

In particular, while the required 26% BEE ownership target was significantly surpassed, the structure of ownership transactions did not, on balance, meet the 2010 Charter’s requirements of “effective ownership” and “meaningful economic participation”.

According to Minerals Council senior executive for public affairs and transformation Tebello Chabana, the definitions of “effective ownership” and “meaningful economic participation” were introduced in the 2010 Mining Charter. Many successful ownership transactions concluded prior to 2010 hadn’t applied these new empowerment shareholding requirements and therefore were disqualified even though they had achieved economic empowerment in reality.

What the findings of the report also indicated is that the mining industry does not view transformation as a mere compliance or box-ticking exercise in that it is going way beyond compliance, Chabana points out.

While it is still early days in the implementation of the third iteration of the Charter, which came into effect on 1 March 2019, the Minerals Council has already begun planning how it intends to assess the industry’s transformation compliance.

Unpacking the 2018 Mining Charter

“While the latest iteration of the Charter pushes the mining industry to transform more than ever before, as it rightfully should, the Minerals Council notes that while it provides a reasonable and workable framework, a few areas of concern remain unresolved,” says Chabana.

The non-recognition of continuing consequences of previous empowerment

transactions, particularly in respect of mining right renewals and transfers of these rights, was and continues to be a shortfall of the Charter.

While the Minerals Council held talks with the DMRE in a bid to seek consensus on the matter, the efforts were unsuccessful and the matter was handed over to the courts where the Minerals Council is currently seeking judicial review on the matter.

Another aspect of the Charter before the court is the practicality of procurement provisions related to the local content targets for mining goods. The Mining Charter stipulates that a minimum of 70% (by value) of mining goods must be manufactured or assembled in South Africa within the next five years – this requires that at least 60% local content be used during manufacture or assembly. While the Minerals Council supports the procurement from local entities and the local manufacture of goods required for mining, the local content target of 60% must be met or exceeded before mining goods qualify for recognition and measurement. Currently, mining goods are nowhere near achieving the 60% local content target and therefore do not qualify. It would take decades of support and funding from the government for mining goods to meet the 60% local content target. That is where the challenge lies, says Chabana.

Moreover, the extent to which the Mining Charter elements apply to junior mining companies is too harsh, says Chabana, noting that exemptions are only made for junior and small-scale mining operations with turnovers of less than R150 million and then more for those of R10 million. This threshold should have been in line with similar global turnover thresholds of at least R500 million, the Minerals Council believes.

Moreover, according to Chabana, of critical and equal importance is that there is no process in place to engage the DMRE or mining industry stakeholders on an ongoing basis relating to the implementation and interpretation of the Mining Charter. “We would have liked to see the new Charter usher in a process of regular engagement as opposed to the current engagement which takes place only every five years,” he says.

The Minerals Council will continue to advocate that the DMRE assists the industry in clarifying some of the vague and conflicting provisions in the Charter as well as in the Implementation Guidelines. **MRA**



While the latest iteration of the Mining Charter provides a reasonable and workable framework, a few areas of concern remain unresolved,

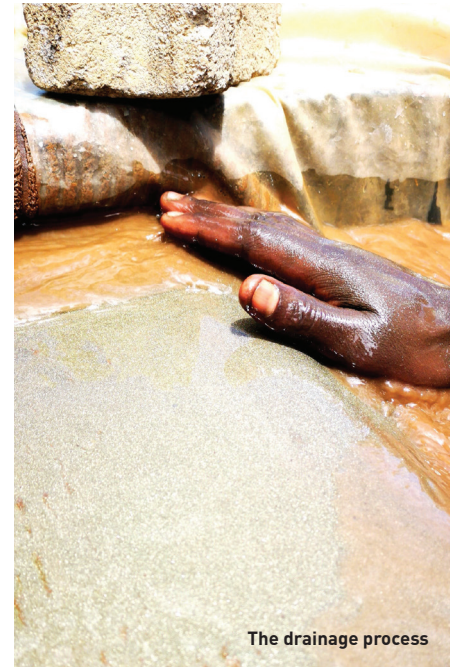
TEBELLO CHABANA



An entrance into an underground tunnel



A Zama Zama miner at work using a penduka



The drainage process

Unlocking the potential of SA's 'Zama Zama' sector

Fresh thinking needed

By Dr Vidette Bester, Social Researcher and Community Development Specialist

In 2011 I took part in a research trip to the Democratic Republic of the Congo (DRC). It was during this excursion that I had the privilege of engaging with a number of artisanal miners. Even after my return to South Africa the stories I heard from these artisanal miner women, children and men stayed with me. My interest in the complex and contentious issue of artisanal mining was born.

In particular, I was struck by the levels of poverty and desperation faced by these miners. This sparked in me an overt mindfulness of the power imbalance that exists in developing countries between the state and corporations on the one hand, and the poor on the other.

Also known as 'Zama Zama' mining, an isiZulu phrase meaning "we are trying",

the issue of artisanal mining entered the South African mainstream media a few years after my visit to the DRC. Media coverage has, by and large, portrayed Zama Zama miners as violent, criminal men who have illegally immigrated to South Africa. The response from the state and mining houses has been similarly negative, resulting in the rollout of policing measures which have further

marginalised these people. However, my experience in the DRC informed me that the matter was not quite so black and white, and I felt compelled to take a different, deeper and more constructive look at this phenomenon. This motivated me to study Zama Zama mining in detail for my doctoral study, which I completed in 2019. My thesis investigated meaningful and practical ways in which

the state and mining industry in South Africa could respond to the currently marginalised and criminalised artisanal mining sector.

Legislation does not recognise artisanal mining

The first step lay in understanding what had changed between the romantic image of the gold or diamond prospector of old and the modern-day equivalent. In part, the answer lay in the fact that artisanal mining is not recognised in South Africa's mining legislation. The Mineral and Petroleum Resource Development Act (MPRDA) of 2002, the central piece of legislation regulating mining in the country, fails to cover artisanal mining. It is as a consequence of this lack of legislation that artisanal miners continue to be criminalised and sidelined. While this oversight persists in South African law, research on the issue of criminalising artisanal mining clearly shows that it is both unsuccessful and unsustainable to continuously police

the sector. Regrettably more forward-thinking and developmental ways of dealing with artisanal mining have failed to find traction, despite the existence of evidence which links participation in these activities to extreme social pressures such as desperation and poverty.

With an official unemployment rate of 29% prior to the COVID-19 pandemic, and estimates that one of the world's highest rates could accelerate to 50% as a result of the outbreak, already high poverty levels and inequality in South Africa are expected to increase. As a result, what was already a highly neglected sector in a developmental sphere, has now become even more pressing. Additionally, considering the retrenchment of mineworkers (both pre- and post-COVID-19), as well as mine closures and the prevalence of abandoned mines, the conditions which encourage artisanal mining are on the increase. This puts the spotlight firmly on the responsibilities and actions of mining companies with

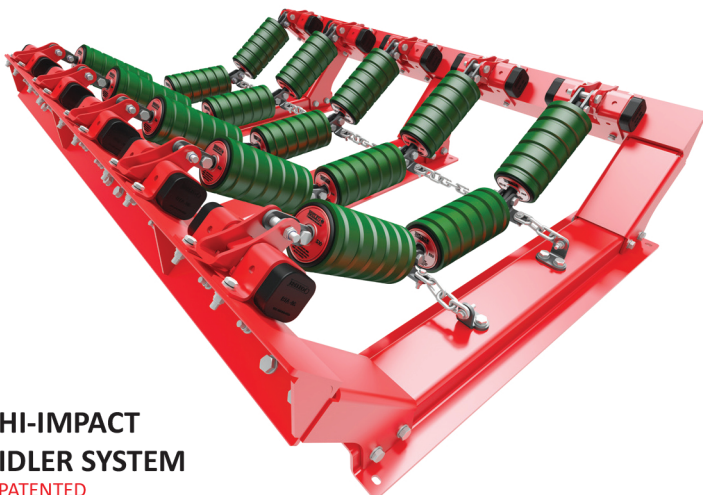
respect to the artisanal mining sector, particularly as an avenue for corporate social responsibility (CSR) investment.

Formalising the artisanal mining sector through CSR

The CSR efforts of South African mining companies are widely directed in accordance with the MPRDA, the Mining Charter of 2018 and the National Environmental Management Act. These pieces of legislation were developed largely to address the injustices from the past, to foster socio-economic opportunities for historically disadvantaged South Africans and to guarantee a sustainable environment for mining communities. Furthermore, a primary goal of the MPRDA was to develop and promote South Africa's artisanal and small-scale sector. In practice, however, the MPRDA addresses the small-scale sector and not the artisanal aspect of mining. This has left historically disadvantaged South Africans with very few options for entering the formal mining sector.

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↑ A self-made drainage system to allow gold particles to be separated from sand



↑ A typical Zama Zama site

In my research, which focused on the gold mining sector in Gauteng, I conducted a series of qualitative interviews with Zama Zamas, civil society and mining houses. The aim was to explore whether or not CSR efforts could be put into place to address the artisanal mining sector as a whole, as well as the associated issues. I subsequently developed a CSR framework that addresses artisanal gold mining in South Africa. The framework can also be used to help the formal sector mitigate the risks that artisanal mining poses to large-scale mining operations and the formal workforce.

The empirical findings of the research provided a new understanding of artisanal mining in South Africa, as well as the mining companies role and responsibilities in this matter. The research explored the profile of the Zama Zamas, challenges of the sector, as well as the drivers of the artisanal mining sector. The findings suggest that fresh thinking is required, which must be backed up by meaningful dialogue between all parties. By adopting this approach new ideas and tactics can be developed which may find constructive ways to develop and support artisanal mining.

This type of engagement cannot happen soon enough. The current, unsustainable state of Zama Zama mining can no longer be ignored – both from an ethical and safety perspective as a socio-economic opportunity worth exploring as a way of mitigating the very

drivers that are spurring on this phenomenon. This is where the CSR framework steps in: To help mining companies formulate and implement a range of impactful CSR initiatives in this space.

Developing a CSR framework that incorporates artisanal mining

Mining companies differ widely in their approaches to CSR, with some starting out on this journey and others proving more advanced and mature in their CSR thinking and execution. The framework, therefore, allows for the incorporation of something as elementary – and valuable – as a company’s own research on Zama Zama mining. For those in the nascent stages of devising a CSR approach, this would provide a deeper understanding of the sector and the people making their living through artisanal mining. Additionally, mining companies can also embark on reviewing and redeveloping their re-skilling strategy to suit the job market; ensuring that they do not fuel the unsustainable Zama Zama sector yet further through widespread retrenchments. What the CSR framework also offers is a blueprint to explore and develop artisanal mining to its full extent. This can be done by incorporating artisanal mining into the end-of-life phase of an operating large-scale mine or into integrated mine closure plans. Another option is to develop the sector alongside industrialised mining operations.

The current state of artisanal mining in South Africa echoes other instances of failed development, but it also offers an opportunity to truly address injustices – both those created prior to 1994 as well as post-1994. What is apparent is that a delicate balance is required when confronting the realities, the drivers and the potential solutions that arise out of this matter. Curbing the Zama Zama mining sector should be treated with a great deal of caution, but that is not to say it should be a free for all. Regulation should be introduced, but in a manner that will not curb or criminalise the sector again.

Allowing the sector to flourish will add to the development and sustainability of other informal businesses that exist around Zama Zama activity. When such a space is created, the socio-economic development potential of artisanal mining can be fully explored. **MRA**



ABOUT THE AUTHOR

Dr Bester is a social scientist and corporate advisor in the fields of corporate social responsibility and community development

“The current, unsustainable state of Zama Zama mining can no longer be ignored from an ethical and safety perspective,”

DR VIDETTE BESTER



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Partners in Performance is a fast-growing international management consultancy. Its Africa practice focuses on the mining and resources sector, where consultants help clients improve safety, increase production, lower costs, and optimise capex. The company puts a strong emphasis on empowering women throughout its operations. *Mining Review Africa* caught up with the company's MD and some of its female consultants to chat about their views on being women in a still male-dominated industry.

Skipp Williamson, MD



It makes me incredibly proud to work with amazing women and colleagues like Rhian, Helen, Winrie, Nielson, Ashleigh, Supriya and many more who consistently drive transformational change for our clients and are paving the way for other women in the mining industry to succeed and thrive. By actively supporting and celebrating greater gender diversity in mining, organisations can unlock greater capability and more innovative thinking, leading to better outcomes that impact the bottom line.

Capturing these benefits starts with understanding the challenges that women face and creating a work environment where they are supported to achieve their full potential. As a company, we are strongly focussed on creating an inclusive culture where people feel safe to speak up when they see gender discrimination or unfair behaviour, and where women can discuss the obstacles in their path and ways to problem-solve them together.

Helen Hill, Manager



I work with mining clients to increase throughput and reduce costs. The most meaningful moments for me are often the smaller ones. It is rewarding to really get to know my clients and to share my own knowledge and experience to help them succeed.

I would like to see the number of women working in senior mining roles grow to the point where it is no longer a surprise to see a female general manager, mining manager or head of geology. Our leadership team at Partners in Performance has worked hard to understand the challenges we face as female consultants. As a company, we have developed an open culture where all consultants, male and female, can feel more comfortable discussing these challenges. My hope is that all workplaces can become more diversified to the point where barriers to women excelling in the industry become a thing of the past.

Winrie Kruger, Manager



I am new to consulting but have been working in the mining industry for 16 years. In my previous position, I was a senior project manager responsible for major project development in the coal mining sector. During my tenure, we took one underground project from concept to commissioning and three opencast projects to implementation. I often struggled with imposter syndrome, and at times I still have to remind myself that I bring a lot of value to the table and should 'lean in' – not only for myself but for my other female colleagues.

Much has changed for women since the start of my career, but there remains a perception that women should adapt to fit into the mining culture. I would like to see the industry become a place where everyone can feel safe to bring their strengths and weaknesses to the table and collaborate.

Rhian Capostagno, Associate Principal



The most rewarding part of my work is seeing the growth in the people I work with across the mining industry. The greatest success for me is hearing from the frontline team how things have improved and seeing them take ownership of the changes to drive results.

I have been a consultant for 24 years and the attitude towards women in mining has improved dramatically in that time. There are more opportunities for women in technical roles and the continued growth in opportunity at high education levels will help to produce more female candidates and increase the balance potential. Balancing work and family commitments, especially when work requires travel to remote locations, remains a challenge for both women and their employees. Interestingly, the COVID-19 pandemic has shown that in many situations, working remotely from home is possible, and productive. I view this as an opportunity to forge more flexible work arrangements which could particularly support working mothers.

My advice to women entering the industry is to focus on changing perceptions through performance and building respect for your contributions to the team. Success will flow from there.

Supriya Soorju, Associate



I am currently working to assist a client with their response to the COVID-19 outbreak in South Africa. Our team helped rapidly develop and deploy a surveillance data gathering system in select hospitals designed to provide key stakeholders and front-line healthcare workers with valuable clinical information on COVID-19. It is rewarding to know that the work you are doing on a daily basis is helping organisations to minimise the impact of COVID-19.

The leadership team at Partners in Performance is actively involved in ensuring female consultants are comfortable working on client sites which are predominantly male dominated. We have a Women's Diversity Think Tank comprised of women in the firm from various backgrounds and levels of consulting experience. The leadership team consults the Think Tank when making decisions that could affect women in the workplace.

Nielsen Mafukidze, Associate



My work involves advanced data analysis to draw insights that help our mining clients deliver bottom-line improvements.

As a young mother, one of the challenges I have had to face is learning to balance my family commitments with the demanding nature of mining work. Last year, Partners in Performance introduced a 'women in consulting' series of workshops which helped equip me with the tools and skills to thrive amidst these challenges. The learnings from these workshops have been instrumental in building my confidence to speak up and better manage my work-life balance needs.

Ashleigh Truran, Business Analyst



One of my most recent career highlights involved supporting a mining client in increasing throughput in their processing plant. One of their key issues was the visibility of KPIs, so I worked with the client team to set up an automated system to make KPIs visible in time for morning meetings on a daily basis – facilitating greater accountability and problem solving.

I have found it incredibly valuable to hear and learn from some of the more senior women on our team. One of the best experiences I have had at Partners in Performance was attending the 'women in consulting' workshop series, which aimed to identify the difficulties women face and help empower us to overcome these challenges. I was amazed with the support and positive feedback I received from the other women in the room. It helped assure me that we are not alone.

Transformation within De Beers Group

It comes from the heart

MARSHA CHETTY, head of human resources at **De Beers Group** Managed Operations, has been tasked with leading the global company's transformation experience across South Africa and Canada. Having grown up in the apartheid era in South Africa, Chetty was impassioned by the changes brought about in the country by then president Nelson Mandela. Today, she is eager to bring positive change to all of De Beers Group's stakeholders as her contribution to building a truly sustainable business, writes **LAURA CORNISH**.



De Beers' partners with WomEng to support girls in STEM subjects

“Diamonds bring beauty to the world. But we think they can do so much more. We want to use our diamonds, and our business, to make life brilliant – for our people, our customers and the world around us. This means living to one's full potential, for communities to thrive and be resilient, and to contribute to a balanced and flourishing planet. These are the things we work towards. These are the things that make a brilliant life. This is our purpose,” starts Chetty.

This is De Beers Group's core purpose and value in driving the decisions it makes every day. The company considers sustainability and transformation keystone drivers upon which its core mining business is built and grown.

Easy in theory perhaps to achieve but delivering on these areas is not a tick-the-box exercise. “Making life brilliant for our shareholders and stakeholders is achieved through the manner in which we conduct ourselves,

how we collaborate with our external partners and how we interact with our employees. The underlying foundation in how we do so is driven by our values: to be respectful to everyone, ensure we can walk a day in the shoes of someone we work or interact with, and – importantly – being consistent in doing so,” Chetty outlines.

It is not difficult to see why she is such a perfect fit for the position she fills when she talks about what drives and motivates her in the work she does. Having grown up during the apartheid era in South Africa, she looked to leaders such as Nelson Mandela to inspire her. From an early age, she strove to be part of the change that would drive discrimination and racism away.

“Having grown up in South Africa in this era, I had the opportunity of experiencing the world through transformational leaders like Nelson Mandela who drove the change through symbolic behaviours. One of them that's etched on my memory is the Rugby

World Cup victory in 1995. “That leader – and other people I chose to surround myself with – shaped me as a person, helped determine what I wanted to do and drove my career objectives.”

“The real driver however is taking my own passion and learnings, imparting my knowledge and unleashing creativity in others. That energises and motivates me,” Chetty shares.

Leading by example

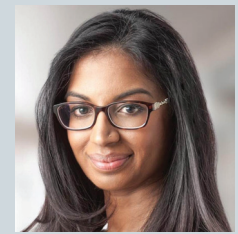
In 2017, De Beers Group announced a three-year partnership with UN Women and pledged to accelerate the advancement of women across its organisation. The company made three specific commitments:

1. Community: Invest US\$3 million over three years to support women and girls in the company's diamond-producing countries;
2. Company: Achieve parity in the appointment of women and men into senior leadership roles by 2020; and
3. Consumer: Ensure De Beers' brands

“

Empowering a person starts with training, that training leads to the development of a skill, that skill becomes a competence, that competence becomes a career, and that career becomes your legacy,

MARSHA CHETTY



are a positive force for gender equality through marketing.

As part of the partnership, Chetty says that CEO Bruce Cleaver became a UN Women HeForShe Thematic Champion – pledging to make gender an institutional priority by implementing a bold, game-changing commitment to advance and achieve gender equality.

“Through the efforts and time given by our CEO to achieving greater transformation efforts throughout the business we are giving a clear message to our employees – that we have time for and want to listen to the voices of our personnel, understand their stories, their communities and even their worlds,” Chetty states.

“This lays the foundation for building a work family where the principles of family apply – respect, feeling valued, having the courage to speak up – with supportive leadership teams who are there to help them know how best to interact, be inclusive, empowered, free of discrimination, and break through glass ceilings.

“With these principles embedded in every person within our organisation, we will achieve one of our biggest objectives – customers who not only buy our diamonds, but also buy into the values behind how that diamond was mined, recovered and delivered to market,” she highlights.

Chetty's work at De Beers Group

“My focus is creating more positive stories in our communities and within the organisation who are or have been previously disadvantaged,” she shares, also talking about the ripple effect of building a community who can then continue to build their own people further. Or simply put, empowering people with the right tools to empower others.

“Empowering a person starts with training, that training leads to the development of a skill, that skill becomes a competence, that competence becomes a career, and that career becomes your legacy,” Chetty outlines, and this is the process she follows which has

in her time seen the successful growth of many people and communities across the globe. “It is also important to recognise and celebrate the small wins because that builds momentum for greater achievements.”

To date Chetty has been involved in a number of transformation programmes and initiatives, including empowering men to understand what is happening in the workplace so as to encourage diversity and inclusion. “We gave the same training to women as well to ensure all-round inclusivity.”

As part of De Beers Group's commitment to standing with women and girls, the company is aiming to support at least 1 250 women micro-entrepreneurs. To do this, the company is working in partnership with UN Women and national governments to develop a regional capacity-building programme across its operating countries of Botswana, Namibia and South Africa between 2018 and 2020. A total of 460 women micro-entrepreneurs have graduated from the programme in South Africa.

The AWOME (Accelerating Women Owned Micro-Enterprises) programme aims to support women micro-entrepreneurs to build their businesses, create more jobs and generate more income, through business and life skills training, as well as access to networks and support. It follows a Train the Trainer approach, whereby local community members are trained to train and mentor women micro-entrepreneurs. This generates jobs for the trainers and means the programme can be sustainably embedded, with the aim of gradually reducing support to ensure self-reliance.

Micro-entrepreneurs who are already involved range from children entertainers, fashion designers, diesel mechanics, florists to farmers – amongst many more.

Another initiative close to her heart, through the partnership with UN Women, is the HeForShe Thematic Champion. This programme is committed to achieving parity in the workforce appointment rate by 2020 and to ensuring that the company is a positive force for gender equality through its marketing campaigns. **MRA**



↑ Local businesswomen celebrate after graduating from the Accelerating Women Owned Micro Enterprises Programme

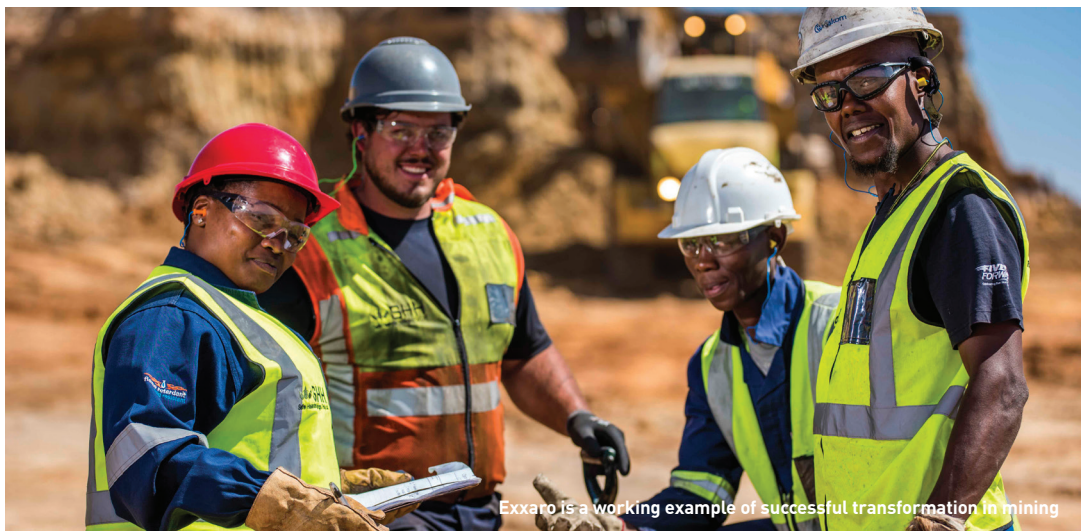


↑ De Beers colleagues in Canada committing to a gender equal world on International Women's Day

Diversity and inclusion

Drive Exxaro's dynamic transformation programme

As one of the largest and foremost black-empowered mining companies in the country, **Exxaro** is an industry leader with regard to transformation. **MZILA MTHENJANE**, executive head: stakeholder affairs and **VANISHA BALGOBIND**, executive head: human resources at Exxaro tell **GERARD PETER** how the company's transformation policies are positively impacting South Africa and the African continent.



Exxaro is a working example of successful transformation in mining

“

We have an intentional focus on employee engagement and workplace culture that will drive the growth of the company,

**VANISHA
BALGOBIND**



There has been an imperative for transformation in the South African mining industry since 1886. However, the successful attempts at transforming the industry only took place in the mid and late 1990s to early 2000s – at the same time that South Africa's economy was opening up to the rest of the world.

The restructuring of the economy and specifically the mining industry resulted in the creation of private companies such as Eyesizwe Mining in the coal industry, African Rainbow Minerals in gold and Royal Bafokeng Resources in platinum and chrome. The establishment of Exxaro and its listing on the JSE in 2006 was a significant milestone in the path to transformation of the mining industry – with a 52% broad-based black shareholding.

According to Mthenjane, transformation, as defined by the Mining Charter and the Broad-based Black Economic Empowerment Act, is the thread that has bound Exxaro since its establishment in 2006. “It is embedded in our

purpose statement – to power better lives in Africa and beyond. From the beginning, Exxaro has always been about people, as reflected in our brand. Mining is what we do, and transformation is how we have, and intend, to continually positively impact South Africa and the African continent through our business activities,” he states.

Transformation culture starts in the workplace

To ensure that the company lives this purpose, Balgobind explains that Exxaro has embarked on a culture drive as part of its strategy development. “Given the evolving environment of climate change and now COVID-19, empowering employees to take ownership and accountability has provided opportunities for learning and growth. The uncertainty and ambiguity of the future outlook demands a strong culture of teamwork, both within the company and externally with stakeholders; and so a culture of openness and connectedness, with an emphasis on diversity, becomes an imperative.



↑ The company's transformation culture starts in the boardroom

We have an intentional focus on employee engagement and workplace culture that will drive the growth of the company as we embark on a path to build an energy resources business. We are responding to the opportunities presented by the Fourth Industrial Revolution (4IR) and climate change through various initiatives and driven by professionals across gender, race and age profiles at several of Exxaro's operations. We are preparing our workforce of the future through an embrace of 4IR, rather than fearing it," she explains.

Mthenjane adds that diversity and inclusion is a key principle in all Exxaro's business strategies both within and outside the organisation. "Diversity is the common understanding that each individual is unique, and we recognise the sum of our individual differences as a collective force that catapults innovation for Exxaro and the greater society. We have also taken the transformation agency role beyond ownership to include other critical aspects of the Mining Charter that ensure a cultural experience in transformation and sustainability in the performance of the organisation."

As of 31 December 2019, Exxaro has 66.7% of its members being independent and an equivalent number being black South Africans. Black women consisted of 31% of the board. The composition of the executive management team during the same period included 55.5% black executives with a 33.3% women representation, including 22% black women.

A collaborative approach

In relation to communities, Exxaro is a catalyst for change in the communities in which it operates. "We are improving our methods of delivery of community development initiatives through an application of 'project management body of knowledge' principles, increasing the network of engagements within the organisation to listen to external stakeholders and ensure visibility and meeting of stakeholder expectations," states Mthenjane. "Exxaro has spent over R500 million between 2006 and 2016 on two social and labour

plan project cycles and other initiatives."

Over the next five to ten years the company intends to spend at least twice as much through enhanced social impact strategies that will include its enterprise and supplier development (ESD) programme and repurposing of rehabilitated mining land, to name a few. This will create new enterprises and industries to grow both local and national economies.

Exxaro started its ESD programme in 2018. According to Balgobind, the programme is building on a foundation of compliance, with the express objectives of achieving social impact, diversifying the company's suppliers and innovating to create new entities that will not rely on the continuing existence of Exxaro's mining operations.

"Between 2017 and 2019, we have invested over R216 million through loans and grants to existing and new SME suppliers providing services to Exxaro, such as contract mining, cleaning, equipment servicing, strategic consulting and advisory services. Of the enterprises supported in 2018 and 2019, 22 are majority youth owned and 13 are majority female owned," she explains.

In conclusion, Mthenjane says that the scale of the transformation challenge is too large for just one company, or even one industry to address, given a legacy of more than 120 years of exclusion and subjugation in the South African mining industry. Therefore, more can and should be done for equality and inclusion. "South Africa's mining industry has a mixed history of successes in areas of deep-level mining technology and mineral processing, but a very poor record of impact on people and society, irrespective of colour and gender. A holistic approach to transformation and empowerment and placing value on a South African life is required and consists of social partners, amongst politics and government, business and civil society. This will build its citizens' capability through investment in research and development that will create new economic opportunities for South Africa.

"An intense focus on education and skills development will provide for ongoing innovation and obtain the benefit of the youth; deliver adequate and affordable basic services in health, water and energy; boost public-private partnership investment in infrastructure; and most importantly, create a safe and secure environment for all residents to invest and thrive in.

"Therefore, it's not just the mining industry or a select number of companies that must do more for equality and equity in mining and the rest of the economy, especially in this time of increasing systemic impacts from climate change and COVID-19. All social players must do their bit and do it very well." **MRA**

“A holistic approach to transformation and empowerment and placing value on a South African life is required,”

MZILA MTHENJANE



Women in mining

New beginnings and opportunities

A record number of ladies tuned in for the DRC-focused *Women in Mining (WIM_DRC)* live webinar session during Digital **DRC Mining Week** that took place from 17 to 19 June.

WIM_DRC was first established in Lubumbashi at last year's conference and exhibition and aims to end all forms of discrimination against women in the Democratic Republic of Congo's (DRC) mining sector and to develop the DRC by integrating the gender approach to ensure good governance, fairness and transparency.

The 40 participants of the WIM_DRC webinar included members of parliament, state and civil service workers, representatives of the industrial and artisanal mining sectors and civil society, as well as technical and financial partners.

Men make important allies

"The challenges that women face in the mining sector are very similar if not the same worldwide. It always revolves around issues of inequality and equity," said Kaleba Huguette Ngoie-Kasongo, executive director of HEAR Congo. HEAR is a grassroots organisation focused on vulnerable women and children.

"It is therefore very important that the women who are involved in this sector



Gety Mpanu Mpanu (third from right) at last year's WIM_DRC conference

work in synergy in an inclusive manner. It is strategic to be heard under a structured and recognised platform, and WIM_DRC is a good example."

Ngoie-Kasongo added that women can make men important allies to assist them in this process. "When all stakeholders recognise the invaluable contribution of women in the mining sector, they may well succeed in having a place. The goal is for women in this sector to be well equipped, well connected and to position themselves as leaders to embrace their roles and responsibilities. Beyond being heard, they need to be respected.

Clear vision of gender parity

Chairing the session was Gety Mpanu Mpanu, Deputy Head of Cabinet, Head of State in the Presidency of the DRC, who is also fondly known as the 'godmother of WIM_DRC'.

During the discussion on taking women into account when it comes to local content in the extractive industry, Mpanu stated, "It is important that women get involved significantly in order to contribute to the development of the country, particularly for a sector that has been dominated by men for decades, in

public and private companies, in decision-making as well as in crafts.

"It should also be remembered that this expansion cannot be achieved without political will and without a clear vision of gender parity in the mining sector."

According to Mpanu, to assume important positions of responsibility it is important to invest in training in order to guarantee women who are experts in their fields. "Despite the fact that the law requires 50%, today the rate of women in the mining sector is only 17%. With equal skills, female candidates should be prioritised.

"Furthermore, President Félix Tshisekedi supports the cause of gender and his government is working to strengthen this vision. Also, it is important that decision makers in the mining sector get involved so that the legal character is made effective," she concluded. **MRA**

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Fraser Alexander

Striving to empower women on all fronts

Founded over a century ago, outsourced mining and industrial services provider **Fraser Alexander** has a keen understanding of what is required to build a successful and sustainable business. As a diverse organisation, Fraser Alexander understands the importance of gender inclusivity in the organisation. To this end, the company strives to increase female representation at all levels in its business.

According to Fraser Alexander Executive Head of Human Resources Claire McMaster (a founding member of Women in Mining South Africa, or WiMSA), black women hold 60% of the seats on the Fraser Alexander Board. The newest member of the team being Nompumelelo Makhoba who joins the business in the role of Chief Financial Officer.

Makhoba feels encouraged to work for an organisation that has embraced change when it comes to female representation, not just in administrative roles but operational roles too. Makhoba quotes Sheryl Sandberg, the COO of Facebook and the first woman to serve on its board: "We cannot change what we are not aware of, and once we are aware, we cannot help but change," noting the company's focus on further developing strategies that ensure women play an increasing role in the business.

The inclusion of women in business is imperative, especially in a male-dominated industry such as mining. This, McMaster believes, has an impact on an organisation's sustainability and success. "Initiatives that support the development of women need to be holistic and include leadership buy in, supportive policies, procedures and infrastructure, strategic recruitment, strong talent management, mentoring, network support, ongoing training, sponsorship and growth opportunities," she says.

In 2019, Fraser Alexander supported enterprise development opportunities for a number of women-owned companies including a 100% black woman-owned welding, fabrication and heavy

engineering company as well as a 34% woman-owned, 100% black-owned company specialising in steel fabrication and installation of steel structures.

The company also has a socio-economic development project based in South Africa's North West Province, aimed at high school learners having access to both a maths tutor and online learning programme by means of tablets – during COVID-19 the learners have been able to take these tablets home to continue by means of distance learning. In addition, they provide Palesa pads (reusable and environmentally friendly sanitary pads) to ensure girls remain in school and facilitate attendance of the learners at their annual Fraser Alexander WiMSA career day, to generate the learner's interest in careers in mining.

Fraser Alexander's independent non-executive director Nakedi Ramaphakela believes that the participation of women in mining needs to be more targeted and intentional. Interventions such as encouraging young females to take up STEM subjects in school and to having more education and mentorship programmes available to females educate them about opportunities in the mining sector are key.

Ramaphakela also calls on mining companies to ensure safer working conditions for women. "Having more women sitting in management, executive and board positions helps drive some of these initiatives; however, it should not just be a matter that only women take up. We all have a collective

responsibility to build a society that is fair and equitable," she says.

This sentiment is echoed by Fraser Alexander's REMCO and Social and Ethics Chairperson Rosalie Manning, who strongly believes that we need to create space for inclusion and diversity and to resist the need to fit into a patriarchal model.

While Fraser Alexander drives a strong gender diversity programme, the company believes that diversity is so much more than gender. Earlier this year, Fraser Alexander appointed a LGBTQI+ representative to its transformation forum with the aim of improving awareness of the challenges encountered by members of this community.

The company stands firmly against the latest wave of gender-based violence and any other form of human rights violation. Fraser Alexander has urged its employees to report abuse, take advantage of their employee assistance programme and to stand up against gender-based violence.

Here's to another hundred years of excellence and empowerment. **MRA**





Erin Gilfillan



Takalani Randima

UMS Group

Women can be the catalyst for change

For a woman to succeed in the still male-dominated mining industry, they need to have a clear career path and garner strength from within. This is the advice from **ERIN GILFILLAN** and **TAKALANI RANDIMA** who are part of the executive management team of **UMS (United Mining Services) Group**. **GERARD PETER** reports.

Both women hold key positions and are vital for the shaft sinking and engineering company's progression and ongoing success. Gilfillan, who joined UMS in 2019, is the Divisional General Manager for METS Mining (Mining Engineering Technical Services) and METS Process. She has a B.Eng. degree in Chemical Engineering and has been in the EPCM sector since 2006, working across diverse commodities and regions. In her role, Gilfillan runs the International and South African businesses for METS, which is the engineering and design entity of UMS responsible for all engineering and underground infrastructure designs for mining as well as for the metallurgical processing clients.

Meanwhile Randima joined UMS in 2018 as Manager: Mining Engineering. In 2019 she was appointed as Divisional General Manager for Mining Construction and Development in charge of Shaft Sinkers Southern Africa. Randima

“

Women must not be afraid to sit at the table and the decision to make it to the top ultimately lies with them,”

TAKALANI RANDIMA

has a Mining Engineering degree and started her career in 2008. She has extensive experience in shaft sinking, mining construction, contract mining and project management. She oversees every aspect of Shaft Sinkers Southern Africa's operations including operations, business development, finance, safety and human resources. Takalani is often required to be in full overalls and undertake underground inspections of her projects. She understands and speaks the language of the mining fraternity.

More career options and support needed

Both roles require a hands-on approach and both women have the full support and encouragement of their UMS executive colleagues and board members. “We make decisions on a day-to-day basis – commercial, operational and safety – and we have the full backing of our board,” explains Randima. Gilfillan adds that they also have the full support of the company's UK-based shareholders.



UMS Group's female executives are fully equipped with the skills and experience to deliver any type of shaft sinking or metallurgical processing project

“

Working from home during COVID-19, I have had the opportunity to focus on the transformation policy for my division,

ERIN GILFILLAN

Both women have children and understand the pressures of having to balance work and personal life, particularly in the wake of the COVID-19 pandemic. However, Gilfillan believes that being a mother is sometimes a stumbling block for women in the mining sector, due to the demanding nature of the industry. “Some women have their careers halted and become lost to the industry because they struggle to balance work with their families. Companies need to consider ways to provide these women with careers and flexible work options that allow them to achieve this balance,” she points out.

Meanwhile, Randima believes that many females are dissuaded from the operational part of mining because it can be difficult and this hinders their progress. “Yes, it can be tough but once you gain experience, you can progress and become part of management and influence decisions for more female representation.

Regrettably, the issue of gender based violence is an ongoing concern, particularly in light of the COVID-19 lockdown. Both Gilfillan and Randima advocate that more needs to be done to empower woman to allow them to leave abusive relationships. “One of the barriers to these women is their economic circumstances, so they opt to stay in these relationships. Companies must pay females on an equitable basis to empower them to escape the abuse and support themselves,” says Gilfillan.

Randima adds: “At UMS, we have policies in place on how we deal with harassment and gender discrimination. These are discussed at an Exco level and implemented across the company. Also,

UMS has an open-door policy and during the COVID-19, we have successfully accommodated our female staff in terms of working from home while also taking care of their families.”

However, despite these potential hurdles for women in mining, Gilfillan believes that you can climb up the ladder if you stick to your career path and have a good support system. “Right from the outset, I had a very clear and detailed career path. I knew exactly where I wanted to be at each point in my career and that gave me direction.

“When I first started work, I spent a number of years in construction where I was told that if I wanted to wear pants, then I had to work like a man – and I was told that I needed to be less vocal. But I found a good mentor who encouraged me to voice my opinion and then my career took off.”

Randima adds that the determination for a woman to succeed must come from within. “It doesn’t matter how much you are pushed by others on your career path, a woman needs to believe in herself that she will succeed. You must always have a goal in mind and not just wake up every morning just to go to work. Also, women must not be afraid to sit at the table and the decision to make it to the top ultimately lies with them.”

Meanwhile, while the coronavirus has delayed some of UMS’s business, the lockdown period has provided both women with a chance to rethink their transformation policies. “Working from home during COVID-19, I have had the opportunity to focus on the transformation policy for my division,” states Gilfillan.

Randima says that she has also been doing the same, adding: “COVID-19 has shaken the industry and this period has given us the opportunity to look at how we will have to do business and transformation differently when normal operations resume.”

Gilfillan believes that the positions that she and Randima hold can also be a catalyst for transformation. “For example, when we recruit staff for projects, we can consider greater female representation in the workforce,” she concludes.

In many ways, Randima and Gilfillan are trail blazers for women in this sector of the industry and are held in high regard by stakeholders in the mining and processing sectors for their knowledge and experience. **MBA**



Loesche SA

Transforming the milling industry

Milling specialist **Loesche South Africa**, a subsidiary of Loesche GmbH, is a dedicated local South African corporate firm which was established in 1975 to service customers in South Africa, as well as bordering countries and eastern sub-Saharan Africa. The company has made significant inroads into black economic development through focused investment over the last few years.

As a German owned business, Loesche is currently investigating investment opportunities via the employment equity investment programme (EEIP), as an alternative option to a black ownership structure. Here, Loesche is looking at offering operation and management support via the EEIP programme to help BEE-owned companies establish themselves as potential market leaders in South Africa.

The basis of the support will be via business partnership offerings such as assistance with procuring finance, partnered business ownership, operation and management support and training.

While the company subscribes to strong protocols for human capital development for all of its employees, the EEIP represents the company's commitment to implement specific

programmes to fast-track the development and growth of BEE or previously disadvantaged employees.

Going above and beyond

"Meeting management control and skills development targets are critical to Loesche and Loesche has further embarked on various skills development programmes, including bursaries and internships, to achieve skills development targets over and above the EEIP programme," says Jonathan Smith, sales manager at Loesche SA.

Significant contributions are also made to the development of black disabled people, via internship models supported by short courses. "We honestly believe that our skills programmes should feed new black talent into management positions, and Loesche focuses on assisting existing black employees to achieve higher

occupational levels," Smith highlights.

"Our strict procurement policies have proved to be very effective in achieving our BEE procurement targets, with current supplier and enterprise development projects feeding new black-owned businesses into our main supply chain."

Loesche also takes full cognisance of the need in South Africa to focus on the empowerment of women, especially in the engineering field. 60% of the company's current BEE investments benefit women directly or indirectly.

"We strive to achieve transformation in the true spirit of the BEE codes, and will continue to do so in the foreseeable future. Upliftment of people through support, training and education is the prime objective of Loesche South Africa to enable our people to benefit from a programme aimed at leading South Africa into a truly transformed future," Smith concludes. **MRA**



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A view of both the access road and the haul road under construction for the Khoemacau copper silver starter project

Khoemacau

Paving the way

Tackling the demanding conditions of Botswana's Kalahari Desert, **Concor Infrastructure** is nearing completion of a 35 km access road for the **Khoemacau** copper silver starter project. The company is also busy with constructing a parallel haul road, as well as conducting earthworks and concrete civils at the Khoemacau Boseto processing plant.

The Khoemacau copper project, located in the central Kalahari Copperbelt some 65 km south-west of Maun, is developing underground operations at its flagship Zone 5 deposit. The mine plan involves three adjacent underground mines at Zone 5, each producing over 1.2 Mtpa in their first five years of production. The haul road will allow mineralised material to be trucked 35 km from Zone 5 to the Boseto processing facility, while the access road will be used by light vehicles. After processing at Boseto, the mineral concentrate will be shipped out for smelting.

Good progress has been made on construction of the access road according to Jay Juganan, contracts director at Concor Infrastructure. The contract for both the access and haul roads was awarded in November 2018.

"The access road was little more than a sand track when we established on site and was accessible only by 4x4 vehicles," says Juganan. "Essentially, we are creating a corridor for both roads in parallel, and for the powerlines to be installed by another contractor."

The planning of the haul road also had to consider the large and ancient Baobab trees that are common in the area. Preservation of these trees is a vital imperative, requiring the haul road to be diverted on occasion to avoid



↑ The scope of Concor's work at the Boseto process plant includes earthworks and concrete civils to the existing plant and for the new process plant structures for the crushing, milling, flotation and concentrate handling circuits

about half a dozen Baobabs, which are hundreds of years old.

While the access road is 90% complete and due for completion in Q3, 2020, the work on the haul road is also expected to be completed in Q3 this year. Road construction comprises a 600 mm deep cut filled with pioneer crushed rock followed by a G3 sub base and base layer. In some areas the crushed rock is replaced by a natural calcrete. The wearing course is a 9/19 mm double seal. Concor has had to crush all aggregate on site from the old mine waste rock stockpile at Boseto.

Concor Infrastructure contracts manager Tiaan Krugel notes, the remote location of the site and the dry conditions are among the key challenges encountered on this project.

"The sourcing and timing of the supply of equipment, parts and construction material required careful and detailed planning," Krugel says. "The majority had to come from the capital Gaborone, 900 km away, with the other challenge being that most of our equipment OEMs are based in Johannesburg, which is more than 1 300 km from site."

The scope of Concor's work at the Boseto process plant – the contract which was awarded in November 2019 – includes earthworks and concrete civils to the existing plant and for the new process plant structures for the crushing, milling, flotation and concentrate handling circuits. The plant had previously treated material from an open pit copper mining operation at Boseto, under the ownership of a different company.



Concor Infrastructure is creating a corridor for both roads in parallel



Construction of dams underway at the Khoemaçau copper silver starter project

Krugel highlights the challenges of working with concrete on a remote site, especially where temperatures can reach over 40°C during working hours.

"A special concrete mix was designed to accommodate on-site conditions," he says. "This includes the use of admixtures to prolong the concrete's workability as well as having to chill the water we use before it is added to the cement and aggregates."

In addition to the refurbishment and upgrading work at Boseto, Concor has also contributed to preparing the infrastructure at the Zone 5 mining site, where underground development is underway. The work included all internal roads at the Zone 5 mine, terracing for the 650-person accommodation camp, the mine administration surface infrastructure area, the mine workshops and stores area and the explosives magazine together with construction of the ROM pads.

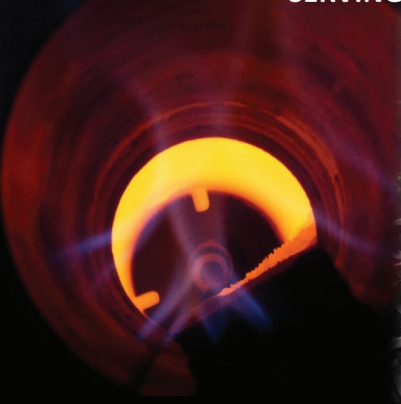
The Khoemaçau starter project expects to produce 62 000 t of copper and 1.9 Moz of silver each year over its planned life of more than 20 years.

"Despite the restrictions related to the Covid-19 pandemic, which saw a reduction of staff numbers on site due to individual choices, we are working hard to ensure that programme schedules will be met," says Juganan. **MRA**



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Project delivery

In a post-COVID-19 world



Having successfully undergone a major business transition in the last 12 months, **Worley** has weathered the storm in a rapidly changing environment, seamlessly delivering strategic and operational objectives through innovation, strength and determination to deliver.

The company sees its ability to adapt as key to the company's resilience, and a major driving force towards a transition into the realities of a post-COVID-19 world.

As such, it is initiating a pioneering distributed workforce model, offering a more flexible working environment, and has moved more than 45 000 staff members from offices to safe working environments over the past three months.

To support this transition, Worley has formed an advisory group to ensure remote work can be accomplished with the same level of integration and security as if done within a company facility.

While there have been some challenges, the company's determination to adjust and renew its workforce model is proving successful.

At a Macquarie Australia conference, Group CEO Chris Ashton says Worley now has the ideal platform from which to move to the next phase of transformation, as the business embraces the trend towards global connectivity and digitalisation.

Ashton believes that COVID-19 has prompted the opening of a "talent door" by emphasising how complex projects can be collaboratively

delivered from any location across the globe.

"We've demonstrated that we can deliver projects in a virtual environment, as Worley's technology systems allow engineers to access advanced 3D modelling systems from home and enable staff to collaborate from different locations to deliver projects virtually," he says.

"The safety and wellbeing of ourselves and those around us is fundamental to life. And without this, nothing we do is worth doing," says Ashton.

In line with this safety ethos, Worley's COVID-19 preparations began on a global scale well before South Africa's lockdown. Robert Hull, vice president for mining, minerals & metals in Africa, says the business recognised the potential impact of the pandemic early, implementing structures towards a global response which were then applied at regional and local levels.

Benefits of flexibility

Hull says the future of Worley's business will include working differently, more efficiently and effectively, as well as working from home. "While we are confronting a new world, we see many benefits in terms of flexibility and efficiency, as

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In the mining, minerals and metals space, feasibility studies and design proposals have seen little decline in demand and we are operating at full capacity,”

ROBERT HULL



well as an opportunity to accelerate change.”

He adds that as a global company, Worley is familiar with operating remotely and continues to offer the same services as before.

“In the mining, minerals and metals space, feasibility studies and design proposals have seen little decline in demand and we are operating at full capacity, while our construction teams not involved in essential services continue to work from home whilst waiting for lockdown restrictions to ease,” he says.

Shaun Mills, vice president project management, energy and chemical services, affirms that Worley has been able to seamlessly transition its services from the workspace to homes.

“We’ve already proven we can successfully deliver projects virtually. In the future this will enable us to fill skills gaps through remote global networking and collaboration free from locality restrictions,” he says.

Mills comments that virtual communication was implemented swiftly and Worley has received positive feedback from customers regarding the remote performance of their project teams. He adds that Worley has used the lockdown period

“

We’ve already proven we can successfully deliver projects virtually,

”

SHAUN MILLS



constructively by increasing training and life skills of employees. Educational material and resources on mental health and wellbeing are freely available to all employees, and Worley celebrated World Safety Week under a ‘Live Life’ theme.

Focusing on working together while ensuring the safety of all, the week highlighted best practice systems, tools and programmes to encourage safety excellence at home and in the workplace.

Worley’s renewable energy projects have remained resilient throughout the COVID-19 crisis

Ashton sees the business continuing to take a lead role in the global shift from traditional energy sources to renewables. “As we step into the new world, we will elevate our focus on transformative trends such as digitalisation and the energy transition, and ensure we apply our project delivery and technical expertise to enable our customers to meet the world’s changing energy needs in a safe, responsible and sustainable manner,” he says.

Worley has already delivered more than 60 000 energy projects, including the largest windfarm in Africa and biggest solar plant in South Africa. **MRA**

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Conveyor service contracts

Reduce downtime and operating cost



Maintenance contracts can save a lot of downtime

By Daniel Marshall, Product Engineer, Martin Engineering

Mining operators are increasingly turning to outside contractors to take advantage of consistent maintenance schedules and expert service. Conducted by experienced and well-trained technicians, these contracts have been found to improve safety and control costs.

Specialty contracting may be a better choice for service than internal resources, since the providers are fully trained on the newest equipment designs and safety procedures. Also, in many cases, they may be able to secure replacement equipment much faster during unscheduled downtime due to their industry-wide contacts.

Performance problems with conveyor components and systems can frequently be traced to improper installation or insufficient maintenance. In addition, serious performance problems stem from a lack of proper maintenance. Using a specialty contractor results in less unscheduled downtime, which saves money and reduces injuries in the long run.

The time and resources required to train employees on equipment and certify them to conduct certain procedures can be a significant ongoing expense. In contrast, specialty contractors must be experienced, knowledgeable and certified to conduct the appointed maintenance and it's up to the contracted company to retain and train that staff.

Due to a greater emphasis on safety and the expensive consequences of unscheduled downtime, mining companies are being more meticulous about conveyor operation and maintenance. This increased

scrutiny includes regular cleaning of spillage, improved dust control, and additional monitoring and maintenance – exposing employees to a moving system more often.

An experienced maintenance contractor recognises these problems and may present solutions that internal resources have overlooked. The improvements are designed to reduce employee exposure, improve workplace safety and maximise productivity.

Maintenance programmes differ by provider and may be customisable to suit individual customers, but they generally fall into three categories: Inspection/report, cleaning/servicing and full service.

A scheduled inspection and report contract sends a specialty contractor to thoroughly examine a system and identify potential issues. A report is produced that presents findings and offers solutions.

A full service and maintenance contract sends in trained technicians who take accountability for monitoring, maintaining and reporting on every level of system function. This provides operators with cost certainty, making it easier to project and manage the cost of operation.

Maintenance service contracts deliver the best return on investment (ROI) through a series of factors including:

- Compliance: The contractor points

out compliance issues and offers solutions prior to expensive fines and violations.

- Efficiency: Maintenance service contracts focus on improving and sustaining uptime with the least capital investment possible.
- Cost of operation: With a defined scope of work on a set budget, along with clear reporting and recommendations on pending needs, operators can better forecast improvements and control labour costs, further improving ROI over time.

Remember, maintenance service contracts are not just a way of controlling and potentially reducing the cost of operation; they are also a safety mechanism. If the criteria of compliance, cost savings and efficiency are met, then a maintenance service contract has provided a tenable ongoing solution. **MRA**

ABOUT THE AUTHOR

Daniel Marshall joined Martin Engineering in 2000. He has been instrumental in the design and development of transfer point accessories, conveyor components and safety products.



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Fuel for thought

Additive boosts mining equipment performance

Fuel Ox, a fuel additive, is helping mining companies save on costs and improves performance.

Mining businesses invest significantly in rock haulers, excavators, slurry pumps and other heavy equipment. The fuel and maintenance costs for that machinery can pile up quickly while chipping away at the bottom line.

Some African mining companies have discovered a way to drive operational and fuel savings while maximising the performance and durability of their crucial equipment, and curtailing emissions with Fuel Ox with Combustion Catalyst.

Originally developed as a fuel additive for high intensity applications including US military operations, Fuel Ox is now available for commercial use. Recent field tests of the product with three African mining companies showed substantial improvement in equipment performance and equipment.

Tried and tested

Mining Haulage Katanga (MHK), one of the largest mining, trucking and heavy equipment operators in the

Democratic Republic of Congo, tested Fuel Ox on two of its tractor-trailer units as well as an excavator. This resulted in a fuel economy improvement of between 5 and 13%.

IAMGOLD Corp. recently tested Fuel Ox on a water pump used at its Essakane mine, one of the largest gold mines in the world, in Burkina Faso, reporting fuel efficiency gains of 9.75%.

Furthermore, a major contract miner operating in Ghana saw an average 10% improvement in fuel efficiency on two of its rock haulers after adding Fuel Ox to their fuel tanks.

Fuel Ox is a multi-functional fuel additive with lubricity agents and detergents. Like other fuel additives, it stabilises fuel, cleans vital engine components, protects against corrosion and removes water. But its proprietary, patented Combustion Catalyst also lowers the combustion point of fuel. This, in turn, maximises the burn of diesel in the cylinder, improving fuel efficiency and performance while lowering soot and other

exhaust emissions that harm both vital engine components and the environment.

“Keeping your diesel equipment performing at its peak in rugged conditions and controlling fuel and maintenance costs are priorities for any mining and exploration company, and Fuel Ox can make a substantial impact on both of those lines,” says Rand Taylor, president of Fuel Ox.

“These field tests showed marked improvement in a few pieces of equipment. When you apply those efficiencies across an entire fleet, the fuel and maintenance cost savings and productivity improvements can be very substantial,” he concludes. **MRA**



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