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FRONT COVER

As mines come to terms with operating under COVID-19 lockdown measures, they have become increasingly reliant on support from their equipment suppliers. Despite working with a reduced staff complement and having to deal with new logistical as well as health and safety measures, Pump & Abrasion Technologies continues to supply and support its clients with the same efficiency with which the company has become synonymous. P4

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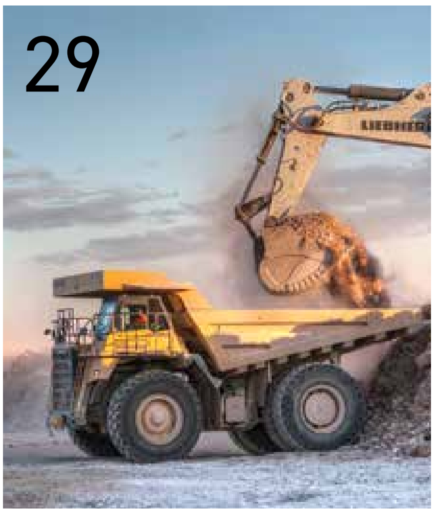
HOT PROJECTS IN AFRICA



SPECIAL REPORT: ENVIRONMETAL, SOCIAL AND GOVERNANCE (ESG)

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CLARION EVENTS

COVID-19

SA mining sector hard hit

Today, 1 June, marks South Africa's entry into Level 3 lockdown – nearly two months after lockdown was introduced to the country.

I'm sure that most of you will agree it's been a difficult period financially, emotionally and physically and – even if many more are back at work – it's not the start of returning to normal. We will continue to operate with plenty of restrictions in place and many of us will continue to work from home and juggle the daily task of managing the house, children and the demands of the job.

Sadly, South Africa's COVID-19 cases have continued to escalate and I'm no longer sure about the effectiveness of lockdown in flattening this number. As of today our reported cases sit at 32 683 with 683 deaths. Unfortunately, what is concerning is that we are experiencing testing kit shortages so the number is unlikely to be an accurate reflection.

On my mind is the sudden number of COVID-19 cases in our mining sector – particularly from the underground mines where fortunately only 50% of the workforce has been operating. AngloGold Ashanti's Mponeng mine revealed 196 workers identified positively for the virus. It has since been shut down. It is unclear at this stage how many more were affected 'downstream' but in a close knit community the risk is extremely high.

Sibanye-Stillwater's Thembelani shaft has since reported 51 cases of COVID-19 (as I write this) and Impala Platinum – the first to suffer publically from the pandemic – revealed 19 of its personnel were infected at its Marula operation.

On the plus side, as we have come to expect, our industry has responded impressively – shutting down the mines and commencing with tracing procedures to find who else may be infected. The very fact that they are testing their own workers is magnanimous, to say the very least.

↑ **Remembering my time at PDAC earlier this year –** seems a lifetime ago

So, what will the next month hold in store? *Mining Review Africa* has its nose close to the ground and is talking at length to our industry across Africa. We'll keep you posted. In this edition we feature some of the hottest projects on the continent that are pushing forward in spite of COVID-19, thanks largely to the measures they have put in place to protect themselves. It's worth a read!

Stay safe, Africa – no doubt I'll see you on the other side of Zoom! MRA

Pump and Abrasion

No slowing down amid COVID-19

As mines come to terms with operating under COVID-19 lockdown measures, they have become increasingly reliant on support from their equipment suppliers. Despite working with a reduced staff complement and having to deal with new logistical as well as health and safety measures, **Pump & Abrasion Technologies** (PABT) continues to supply and support its clients with the same efficiency it has become synonymous with, general manager **SHAWN DONLY** tells **GERARD PETER**.

According to Donly, PABT is aware that its customers are concerned about the negative impact the outbreak could have on their supply chain and their ability to keep operations running smoothly or even at all. Also, the company recognises that the safety of both its customers and its own staff are of paramount importance. It is with this in mind that PABT has implemented a number of measures to ensure that its customers can ensure business continuity in these unprecedented times. These measures relate to the supplying of pumps, repairs, technical support and the introduction of new health and safety procedures.

Donly explains that despite working with a smaller team, PABT was still fully functional during the initial lockdown stage. "During lockdown, we offered support to some of our clients such as coal mines who are regarded as critical service providers. This included assisting with breakdowns and 24/7 technical support," he states.

↑ **Sanitising**

"Even though we are only operating with less than 50% of our staff, we are able to, almost without exception, meet the requirements of our customers. Many of our customers are still not fully operational in line with government regulations but as they commence and ramp up their operations, we are confident that we will continue to meet all customer needs without interruption."

An open invitation to all companies

PABT's ability to offer its full array of pumps, parts and technical support stems from its foresight to plan and adapt its business model according to its customers' needs. A large part of this is down to its high levels of stock availability at its Curve City headquarters in Centurion as well as at satellite branches such as Steelpoort, Limpopo.

"We have always invested heavily in maintaining high levels of stock and this differentiates us from our competitors, particularly during this time. This includes having an adequate supply of pumps and spares for our interchangeable Battlemax slurry pump range and Battlesub submersible range. We also keep high levels of stock for our entire Curve pump range. Furthermore, we have a very stable supply chain on all of our ranges. Our foundry is 100% operational and as such, our turnaround times are the same as before the pandemic, which is to meet 90% of all orders within 48 hours," adds Donly.

Engineer assisting customers online

↖ **Sanitised and ready** for delivery

↗ **Stock on hand**

The fact that PABT is well stocked has also meant that new customers are also engaging with the company for their pump equipment needs, particularly those who have older pumps. "While we support our OEM Curve range, our Battlemax range supports most legacy pumps running in the sector," says Donly.

Safety top of mind

PABT has also taken into account the fact that its customers are operating with limited staff and the safety of these workers is of primary concern. To that end, it has put in a place a number of steps to mitigate risk, including the washing and sanitising of all equipment prior to packaging and delivery.

If allowed, PABT is also able to provide onsite assistance while adhering to all of the required PPE and safety measure requirements to fulfil the necessary tasks.

In addition, the company is also offering off-site repairs, including a pump exchange programme, to limit the unwanted interaction of the clients' personnel conducting the pump rebuilds and repairs themselves. As an added benefit, collection and delivery of all products are offered free of charge. "We are able to swap out a pump and then repair it offsite, thereby minimising downtime at the mine. Also, if a customer prefers, we can upgrade their legacy pump to our more advanced Curve pump range during a swap out," states Donly.

Many mine sites have restricted access to suppliers on site, which Donly says could result in a lack of pump expertise on site. To mitigate this, PABT is offering remote 24-hour technical support where experts are available to assist. What's more, this is a free service and is available to all mining companies throughout the world, not just PABT customers – all you need to do is visit www.pabtglobal.com or email support@pabtglobal.com.

Ongoing innovation

One of the key tenets of PABT's business is customer service and this is even more crucial during the COVID-19 pandemic. "Customer service is one of the most critical components of our business model and it is how we believe we can further differentiate ourselves from our competitors.

"These are the current needs we have identified and introduced to our service offering and as time progresses, we will identify further opportunities to help our customers. As the environment changes and customers' needs change, we will always endeavour to be at the forefront of providing innovative solutions," adds Donly.

As such, innovation into developing more cost-effective products is ongoing, Donly explains. "Even now, our R&D department continues to look into new innovations."

It is this innovation and the proven cost savings of its Curve pump range that Donly believes will assist PABT in making more inroads into the market.

"During difficult economic circumstances, companies are under pressure to reduce costs. Our Curve technology undoubtedly provides the best Total Ownership Cost (TOC) saving over other slurry pumps. Mines are looking to save money by reducing their power consumption, reducing parts usage and reducing maintenance costs, and this is what drives them to invest in our more technologically advanced Curve products," he concludes. MRA

> "Even though we are only operating with less than 50% of our staff, we are still able to meet all the requirements of our customers,"
>
> **SHAWN DONLY**

SAFETY STARTS AT CURVE CITY

While PABT has taken all the necessary precautionary measures to sanitise all products and vehicles departing from its branches, the company also places great emphasis on ensuring the health, safety and well-being of its own staff.

Strict measures have been implemented at its branches to restrict the spread between colleagues. These include supplying the required PPE and twice daily doing temperature screening of staff to limit the possibility of the virus spreading via the transport personnel.

"We take our responsibility towards our staff and towards their families very seriously," says Donly.

May 2020

Top 5 trending stories on miningreview.com

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

On 8 May 2020 Minister of Trade and Industry Ebrahim Patel told about 100 CEOs that the COVID-19 pandemic is likely to have a devastating effect on the economy. Although 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.

Rough diamond prices affected by COVID-19 crisis

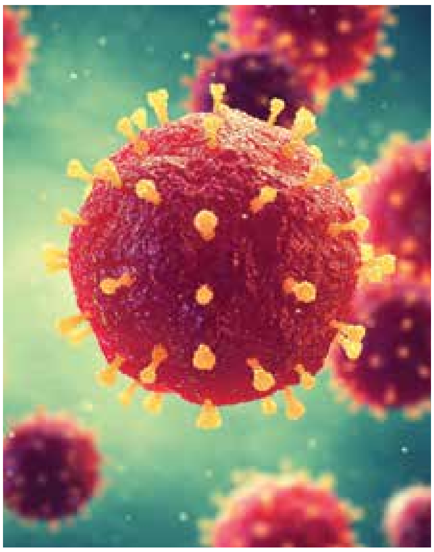
Much of the diamond supply chain has been suspended since border closures and travel restrictions were imposed because of the COVID-19 pandemic. While some rough diamond trading has taken place, the relative volume of transactions has been minimal, with a lack of downstream demand as closed jewellers have no need to replenish inventory. There are always rough diamond buyers – even when the supply chain is essentially frozen as it is now. The question is at what price?

The future of mining in a post COVID-19 economy

A scale-down in mining operations could mean a reduction of employees – which South Africa can ill afford as it has one of the highest unemployment rates, currently sitting at 38%.

Economists already predict that South Africa could shed a further one million jobs in 2020.

Is it all doom and gloom? Or is the industry, which has navigated many preceding challenges, able to push through once the lockdown ends?



ERG plans battery material plant in the DRC

Eurasian Resources Group is considering the construction of a lithium-ion battery precursor plant, to be exclusively supplied with cobalt hydroxide from its Metalkol Roan Tailings Reclamation in the DRC. ERG is planning to develop the plant in two phases. The first phase is expected to produce 90 000 tpa of nickel-cobalt-manganese following a two-year construction period. The expansion will be defined depending on market conditions.

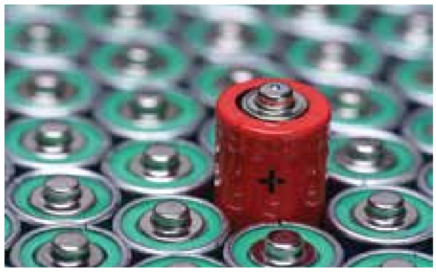
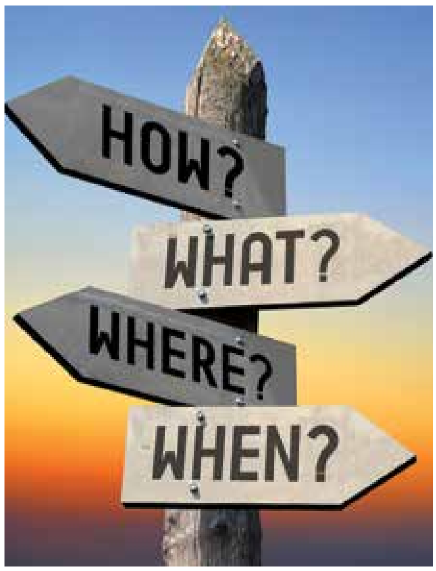


Image: 123rf.com

How to apply for a Mining Permit in South Africa

For details of the required documents and authorisations we recommend using the QR code above to view exactly what is needed for the application of a Mining Permit in South Africa. MRA



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Mining in Africa

WEBINAR SERIES

We understand that topical content and engagement with industry professionals will be essential for many of you right now. Therefore, in order to help meet your needs, we have teamed up with Mining Review Africa and have put together a series of webinars that you can attend for free.

In collaboration with:

MINING REVIEW AFRICA

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17-19 June 2020:	Exclusive Digital DRC Mining Week
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26 August 2020:	How to exploit DRC's commodities other than its strategic metals (cobalt, coltan)
30 September 2020:	Harnessing hydropower in the DRC

5TH ANNUAL

NIGERIA MINING WEEK

16 July 2020:	How is the mining industry adjusting to the new trends imposed by the COVID-19 pandemic?
20 August 2020:	Oil crash: A wake up call to invest in local content and capacity building
17 September 2020:	Repositioning the Nigerian mining sector through improved regulatory and incentives framework

AFRICA MINING FORUM
KIGALI - RWANDA

6 August 2020:	Pandemic survivors among juniors will face new reality
10 November 2020:	Investing in Africa: How to bring your mining project to be bankable post COVID-19?

WEIR MINERALS AFRICA

Re-inventing business for a post-lockdown world

A swift, systematic and proactive response to the COVID-19 challenge has seen **Weir Minerals Africa** evolving new ways of working and contributing that extend well beyond the workplace.

Weir Minerals Africa has put social distancing protocols in place for staff meetings at their manufacturing facilities

According to Gavin Dyer, regional MD at Weir Minerals Africa, it was a three-phased approach that brought the business safely through the national lockdown period. It began with the establishment of a crisis committee when the global severity of the COVID-19 outbreak became apparent. In its first phase of response, the company acted early to communicate vital information about the virus to employees. Hygiene protocols and resources were provided at its facilities, and fever scanning was introduced.

"Our second phase was more radical, including social distancing and ensuring that those staff with pre-existing medical conditions were not on site and – where possible – could work from home," says Dyer. "By planning ahead, we were able to rent about 60 extra laptops to support efforts to work from home, and have about 40% of staff now working remotely."

To be clear on how the company was responding to these unprecedented conditions, standard operating procedures were developed and shared – keeping everyone on the same page. The third phase kicked in with the lockdown, focusing on ensuring continued remuneration of employees and keeping customers serviced. The company's agility in dealing with years of difficult trading conditions was leveraged further in recent weeks.

"By establishing – at short notice – a virtual data interface that employees can access remotely, we have kept the wheels turning efficiently," Dyer says. The product support team remains fully operational, as are the sales engineers and the operational engineering team – working safely from home and in compliance with regulations.

Keeping contact

"The whole process continues to be a complete shift in our view of the world of work," Dyer says. He highlights that, given the physical distance that now exists between colleagues, it is crucial to ensure daily contact and reporting back. "We reach everyone every day; for those without computer access, the contact is continued through mobile phone apps," he says.

The company's long-established Employee Wellness Programme has been further enhanced to address employee concerns relating to the coronavirus, and to be accessed from home. Among the tools being well used is the counselling hotline, which helps employees address a range of issues from anxiety and financial management to childcare.

> "We will continue to explore innovative ways to provide our services remotely, particularly when it comes to sharing technical expertise,"
>
> **GAVIN DYER**

The employee wellness programme, launched some years ago, offers counselling for a range of issues

Leveraging the power of technology through computer platforms and mobile apps, Dyer and his management team address all staff in a non-compulsory video briefing every week or so to keep everyone informed of developments.

"We talk about a range of topics, from the progress of projects in the marketplace, to questions of how we will emerge from the isolation stage and continue to work safely,"

he says. "We also share with staff all that is being done to ensure that we hit the ground running as soon as we can."

Contact is also being actively maintained with customers, including online knowledge-sharing sessions on topic issues. These events have been well attended, with much positive feedback.

"We're aware that many customers are also confined to their homes, so our webinars were a useful way to continue sharing information about how our offerings add value and help them optimise their total cost of ownership," says Dyer.

Rajen Govender, marketing director at Weir Minerals Africa, highlights that the proven usefulness of online forms of communication is likely to open opportunities going forward.

"Tight economic conditions have meant that for many years it has been difficult for mines to release their staff for off-site events like training," says Govender. "Being forced to rely on these online platforms in recent weeks has proved that they can be an efficient and practical means of communicating with customers. I think we will see this approach becoming central to the industry's learning strategies in future."

Seizing this kind of technological opportunity is really part of maintaining business continuity under very demanding conditions, he says. The lockdown is just the start of a process of evolving new ways to adapt the company's holistic business approach – embracing employees, customers and other stakeholders – to the future environment as it unfolds.

←**Social distancing** demarcations in the offices ensure physical distance exists between colleagues

↙**Weir Minerals Africa** specialists have been hosting remote training sessions for employees and customers

↓**Stringent screening** and testing is done on employees, contractors and visitors prior to entering any Weir Minerals Africa site

"Being forced to rely on online platforms in recent weeks has proved that they can be an efficient and practical means of communicating with customers,"

RAJEN GOVENDER

Innovation and donation

As a well-established South African company with extensive local manufacturing facilities, Dyer emphasises that it has looked beyond itself and its customers during the lockdown. There was also a strong desire to contribute to broader society in this time of need.

"We discussed – at various levels within the business – what other impacts we could have in the fight against the coronavirus," he says. "For instance, what innovations we could develop that would make life easier for health professionals."

The result is Weir Minerals Africa's depth of engineering knowledge is generating ideas that could make the workplace, the home or any public space safer and more hygienic in a post-lockdown world. The company's design capacity will take the best ideas forward.

"There was also consensus among employees that we contribute to the Solidarity Fund – and we are doing this in two ways," he says. "Firstly, the company donated R1 million, while at a more personal level, I challenged my executive team to join me in donating a portion of our own income to the fund."

Dyer says that as the South African economy re-opens, it will be vital to observe all coronavirus-related regulations to the letter.

"Mine access is likely to be restricted, so we will continue to explore innovative ways to provide our services remotely, particularly when it comes to sharing technical expertise," he says. "As mines ramp up within these constraints, Weir Minerals Africa will be on hand to ramp up alongside them." MRA

Uranium demand expectations have improved in an environment of supply constraint and drawdown of nuclear utility inventories

Uranium

A bull market is under way

The growing uranium supply deficit, currently being accelerated by COVID-19 pandemic-related production cuts, has seen the price for uranium skyrocket – making it the world's best-performing major commodity right now. With the suspension of operations at four notable uranium mines in March and April, the uranium spot price has surged to US$33/lb in May from $24/lb at the start of the year on the back of this tightening global supply. This situation is unlikely to change in the near future, which could drive the price higher as long-term demand is set to continue, says Toronto-based **Red Cloud Securities. CHANTELLE KOTZE** reports.

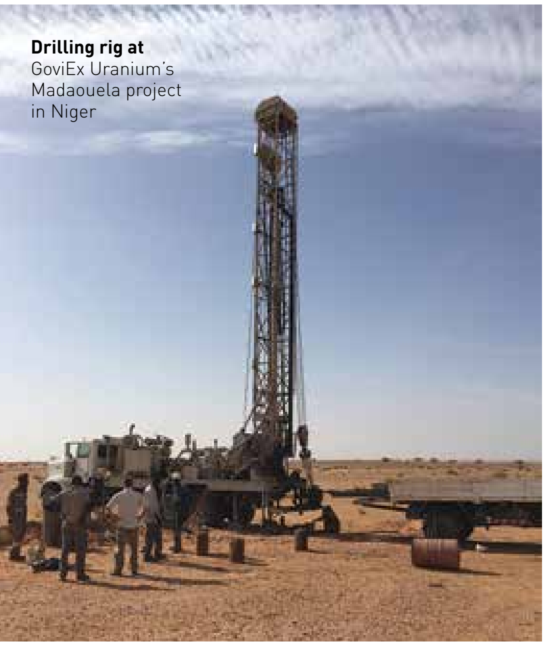
Image: 123rf.com

The four uranium mines in question include the Cigar Lake mine in Canada, suspended on 23 March; the Rössing and Husab mines in Namibia, suspended on 28 March; and Kazakhstan-based Kazatomprom's suspension of operations on 7 April.

Red Cloud Securities (formerly Red Cloud Klondike Strike) – a modern day, next generation brokerage firm focused on providing unique and innovative financing alternatives, growth opportunities and market exposure for mining companies – recently hosted a webinar to explore the drivers behind the uranium bull market further.

According to Red Cloud Securities VP, equity research analyst Derek Macpherson, while the spot market had already begun to tighten before the COVID-19 related mine suspensions, the lockdown regulations prohibiting mining have really been the catalyst in driving the tightening of supply, with about 6–7% of total global production coming offline.

While the uranium market has not been in the favour of producers for quite some time, the shorter-term fundamentals of a tighter market are starting to favour producers, which may bode well for the uranium price



Drilling rig at GoviEx Uranium's Madaouela project in Niger

AFRICAN URANIUM DEVELOPERS PICK UP THE PACE

The changing uranium market fundamentals have led to a resurgence in uranium activity in Africa.

Dual-listed uranium developer Bannerman Resources reignited testwork at its Etango project in Namibia, as part of an updated definitive feasibility study.

ASX-listed explorer Lotus Resources has defined near mine and Brownfield exploration targets at the Kayelekera uranium project in Malawi, which it acquired from Paladin Energy in early March 2020, while ASX-listed Marenica Energy is expanding its land package in Namibia and also adding to its uranium portfolio.

Paladin Energy's sale of Kayelekera has allowed it to prioritise its efforts and resources on maximising the value of the Langer Heinrich uranium operation in Namibia, where it continues to focus on reducing cash expenditure and maximising the value of the strategically significant asset. In October 2019. Paladin concluded a pre-feasibility study to optimise the restart of the operation.

over the medium to long-term. A higher uranium price will enable companies with development assets to raise the necessary funding to build their mines.

While Red Cloud Securities did forecast a future deficit in the uranium market of 31 million pounds by 2022, as several mines reach end of life starting in 2021, it did not predict an almost 13 million pound (and growing) deficit as soon as 2020.

Additional mine closures, such as the 9 million pound Olympic Dam mine in South Australia, and longer mine suspensions due to COVID-19 could push the spot price higher, closer toward the long-term price, says Macpherson.

Moreover, Macpherson notes that starting in 2022, 37% of US uranium requirements are uncovered (which equates to 17 million pounds or 9% of global demand), with typical delivery on long-term contracts being usually two years.

This trend suggests that nuclear energy utilities need to be aggressive with new long-term contracts, particularly in light of the expected supply deficit of 31 million pounds in 2022.

For an industry that has remained relatively depressed since the 2011 Fukushima nuclear disaster in Japan, which sent prices plummeting by as much as 75%, the uptick in price amid the closures has led to a re-emergence of the sector.

Africa's uranium first mover

In Africa, TSXV-listed uranium junior GoviEx Uranium is looking to take advantage of changing market fundamentals and use its first mover advantage in Africa.

The company remained steadfast in the development of its mine-permitted Madaouela uranium project in Niger despite uranium's fall from favour. Company CEO Daniel Major's unwavering commitment to the asset, which the company acquired back in 2007, is most evident in his strategic use of time during the uranium downturn to re-evaluate and improve Madaouela's project economics – preparation that will make it fundraising and construction-ready as soon as prices shift.

Speaking during the webinar, Major said that "even during the quiet times, we worked hard at proving up the mineral resource, permitting, de-risking the project towards development and reducing our debt.

"We also acquired additional assets, including the Mutanga uranium project in Zambia and the Falea uranium, silver, and copper project in Mali," he says. Major says that if the uranium price continues to increase the way it has, GoviEx can quickly respond to this with the construction of Madaouela.

GoviEx would ideally like to see the uranium price settle around $55/lb, to make its project financially viable.

The company is currently underway with an updated prefeasibility study (PFS) at Madaouela, aimed to increase the project's reserve life and lower its operating costs. This will likely make the project very economic at around $50/lb uranium.

The completion of this PFS is expected to precede a full bankable feasibility study and should also allow potential acquirers to better understand the potential of this project. MRA

Image: Kazatomprom

URANIUM DEMAND FROM NUCLEAR ENERGY UTILITIES

The World Nuclear Association's (WNA) Fuel Report, issued in September 2019, highlights improving market dynamics. Demand expectations have also improved in an environment of supply constraint and drawdown of nuclear utility inventories.

The WNA 2019 Fuel Report forecasts an improvement in nuclear energy demand of 2% compound annual growth rate in the reference case from the demand forecast in its previous report in 2017.

The WNA's projections for nuclear generating capacity growth have also been revised upwards – this is the first time in eight years and follows the introduction of more favourable policies in a number of countries.

This improved forecast is supported by the reported 55 new reactors currently under construction and government policy changes resulting in extended reactor lives in the United States and France.

The supply constraint shouldered by the major uranium producers has resulted in the supply of uranium being in a deficit in all of the forecast scenarios in the WNA 2019 Fuel Report.

Projected increased demand and supply constraints have already been noted in the long-term with rising prices, which are currently being extended through to uranium prices this year.

Diversifying local economies

How mines can help

Mines are often the dynamos of their local economies, but with this reliance comes dependence. More can be done to diversify the local economy and make it resilient, according to **SRK Consulting**.

The last two versions of the Mining Charter have placed greater focus on enterprise and supplier development, as well as local procurement, according to Lisl Fair, principal consultant (social sciences) at SRK Consulting.

"This has encouraged many mines to incorporate local suppliers into their supply chains, which is a good start to supporting the local economy," says Fair. "However, it is easy to create over dependence, where many smaller suppliers would not be able to survive the inevitable closure of the mine."

In developing and operating mines, it is important to ring-fence certain products and services for local businesses. If local suppliers cannot be found, mines could create local enterprises in collaboration with local business chambers or entrepreneurial groups or facilitate the formation of joint ventures to ensure that ring-fenced services are delivered by local businesses. As a mine continues to progress through its life cycle these enterprise development initiatives must be re-evaluated to assess their ability to survive post mine closure.

There are several ways of strengthening local businesses, which in turn makes the local economy more resilient. An important strategy for a mine's enterprise supplier development function is to work with suppliers to broaden their customer bases.

"It is always good business practice to avoid having all your eggs in one basket," she said. "Through its training and mentoring efforts, a mine can drive home this point with its local suppliers. This should improve not only these suppliers' long-term sustainability, but also their profitability."

To facilitate contact between suppliers and potential new customers, mines can host trade shows or supplier fairs – inviting other large employers, including other mines, in the vicinity, she notes.

A less intuitive – but equally important – contribution that mines can make is to the informal sector, which usually underpins the economies in local communities. Fair notes that informal businesses contribute as much as 14% to South Africa's gross domestic product, and are in many ways the engine of local economies.

It is important for mines – throughout their life-cycle but particularly as they approach closure – to strengthen the informal sector in their local communities," she states. "This can be done through financial literacy training and basic business skills, as well as improving the infrastructure around their physical working spaces, such as providing shade for traders at taxi ranks."

This kind of training is often not commonly provided by mines, which tend to focus on tertiary education bursaries or skill sets that serve the mine's direct technical needs. However, it is possible to fund alternative training from the skills development fund in the mine's Social and Labour Plan (SLP) or from the mine's supplier development fund. Often, the various development programmes in a mine's SLP are run in silos. Combining core or non-core skills development with basic business training can result in a much deeper impact at the community and individual levels.

Among the most valuable services that a mine can provide is to facilitate access to government support programmes for informal businesses, Fair adds. Through its enterprise and supplier development team, a mining company can help suppliers by informing them of available grants and loans, completing forms and accessing services like SEDA or NYDA grants.

These processes can be very difficult to understand and are areas where support with filling in forms and helping suppliers get quotes from SEDA-registered suppliers can be very helpful. Mines can also provide a platform where small and medium enterprises can hone their skills. Often, the resources in these programmes are out of reach because of the complexity of application forms and procedures.

"Mines should also leverage their larger suppliers – who include well-resourced multi-national companies – to contribute to these efforts," Fair highlights.

As mines approach closure, there is a greater imperative to support capacity-building among small and medium suppliers and the informal

Lisl Fair
Principal Social Science Consultant SRK Consulting

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Senior Environmental Consultant SRK Consulting

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sector, she warns. Where mines do not already have relevant strategies in place, a useful starting point is for experts to conduct a socio-economic impact assessment of the area. This often includes a macro- and or micro-economic assessment and mapping of the skill sets in the area in which the mine operates. A self-sustainability gap analysis could also be done, to identify those suppliers most at risk when the mine reaches closure stage.

"The coronavirus pandemic has also highlighted the importance of having a digital, remote platform for procurement – making it easier for local businesses to supply the mine with products or services," she says. "This can even be done on a regional basis, involving a number of different mines in the same area. While sharing a common platform, each mine can still have its own portal for vetting submissions, for receiving quotes and for tracking orders." MRA

SERIES REVIEW

All mines must close, and this closure has a profound and often devastating impact on surrounding communities and towns. It is accepted that 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. In this series of five articles, experts from SRK Consulting share experience, lessons and insights that contribute to resolving this inevitable challenge.

In the first article, it was 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.

This article, the third in the series, highlights 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.

The fourth article will look at options for how mine employees can be launched into new ventures outside of direct mine employment. 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.

Sanbrado started production ahead of time and under budget

Sanbrado's success

The dawn of a new era for West African Resources

When ASX-listed **West African Resources** (WAF) poured first gold at its Burkina Faso-based Sanbrado project in March this year, it was a watershed moment as the company transitioned from an exploration entity to a gold producer. Executive chairman **RICHARD HYDE** tells **GERARD PETER** how the company realised this remarkable achievement ahead of schedule and under budget.

IN SHORT
Sanbrado poured first gold 10 weeks ahead of schedule and delivered the project US$20 million under budget with more than 3 million hours worked LTI free.

Sanbrado is located 90 km east-southeast of Ouagadougou, the capital of Burkina Faso and covers an aggregate area of 116 km². WAF has a 90% interest in the project with the government of Burkina Faso holding a free-carried 10% interest.

In April 2019, the company announced an updated feasibility study which envisaged an initial 10-year mine life, including 6.5 years of underground mining. Four separate mineral resources were estimated for the project consisting of Mankarga 1 North (M1 North), Mankarga 1 South (M1 South), Mankarga 3 (M3) and Mankarga 5 (M5). The current mineral resource estimate across all earmarked areas is 39.4 Mt at 1.9 g/t gold for 2.41 Moz gold (indicated), and 15.7 Mt at 1.3 g/t gold for 0.68 Moz gold (inferred).

In its first year of production, Sanbrado is expected to produce more than 300 000 oz of gold; an average of 217 000 ozpa in its first five years; and 153 000 ozpa over the current 10-year life of mine.

In March, WAF announced itself as the ASX's newest unhedged gold producer, 10 weeks ahead of schedule and $20 million under budget. As of the end of March, all construction work had been completed: Sanbrado's process plant had been fully commissioned and is now operational along with a 17 MW power plant coming into operation. The company reported that all open pit and underground mining was tracking on schedule and budget with 4 778 oz of gold poured during March.

95%
Percentage of Burkinabe personnel at Sanbrado

The steady pace of Sanbrado's development has meant that the company is able to continue production relatively unhindered in the wake of COVID-19 lockdown restrictions. "If we were still in the commissioning stage, it would be really challenging to get the staff and equipment to Sanbrado, given the fact that the country's borders are closed," explains Hyde.

WAF has also been collaborating with other gold producers in the region regarding supply of key consumables and gold exports, including joining gold shipment charters for delivering doré to operating gold refineries in Europe.

Seeing Sanbrado through to production

Hyde is a geologist with 24 years of experience in the mining industry and more than 19 years of experience in West Africa. He has led WAF from incorporation in 2007, to IPO in 2010 and the discovery of the asset in 2016, through to the development of Sanbrado.

"It was a surreal and emotional feeling taking the project from discovery phase all the way through to producing that first gold bar in March," he states proudly. "Some of our Burkinabe geologists have been with us for 10 years and there aren't many geologists who are involved from the point of discovery through to delivering a producing mine, so this is a unique experience."

At the same time, Hyde admits that the transition to becoming a gold producer did come with challenges, particularly when it came to a mind-set shift in the company. "We were very much an exploration company that did a lot of good drilling and geology work. As a small company, focus has always been to spend our money wisely. This means that we expect staff to spend company money like they would their own.

"As an exploration company, we were spending around $4 million a year over the past four to five years and now, we have just deployed 20 times that amount in the last 12 months. In addition, our progress also means as we have introduced new people into the company who need to fit into

> "It was a surreal and emotional feeling taking the project from discovery phase all the way through to producing our first gold bar in March,"
>
> **RICHARD HYDE**

our culture. We have been fortunate that these new team members have blended in well with the existing team."

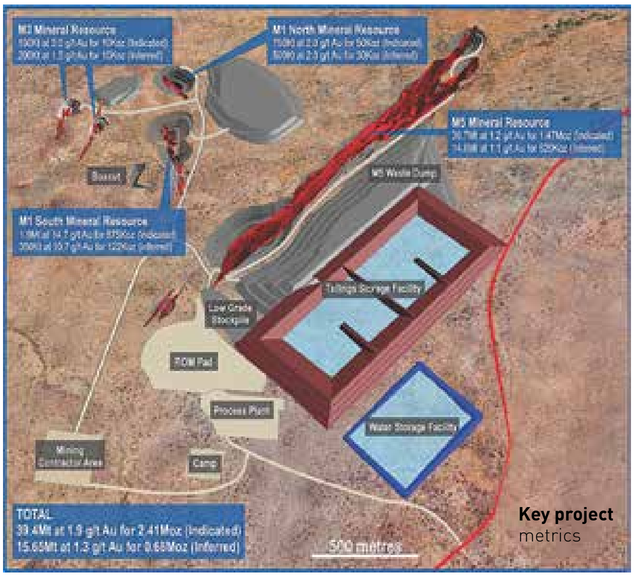
DID YOU KNOW?
4 778 oz of gold was poured at Sanbrado during March

Hyde further explains that the company's newfound status means that it has an increased responsibility to its stakeholders – international and local – as well as the government. However, at the same time, the company is fully aware of the positive impact it can make through mining in Burkina Faso.

For example, 95% of its on-site staff are Burkinabe, with 50% hailing from surrounding areas. "In addition, we have also contracted a local catering company to supply our onsite camp and it sources its produce from local suppliers," Hyde adds. "We also have a high proportion of female employees – more than 25% – and we have initiated a number of training programmes to upskill the females we employ."

WAF has also partnered with the government, community organisations and NGOs to develop

The team celebrating pouring first gold in March



Key project metrics

and support community development projects. This includes building a medical centre and community centre.

Health and safety is top of mind

In addition to bringing Sanbrado into operation ahead of schedule, WAF can also boast more than 3 million hours worked without a Lost Time Injury (LTI) at Sanbrado. What's more, even prior to Burkina Faso enforcing a COVID-19 lockdown, the company had already been adhering to guidelines set out by the Western Australian Department of Health since early February and has continued to update procedures as the situation has unfolded.

In addition, its CSR team has been providing updates and educational material to minimise the potential impact of COVID-19 on local communities.

Acquisition will increase production output

For the past two years, WAF's focus has been on getting Sanbrado into operation. Now it is looking to increase its production profile and life of mine. To that end, in April the company announced that it had entered into a definitive agreement to buy the Toega gold deposit from Canada's B2Gold Corp. for $45 million.

Located within 14 km of Sanbrado, Toega has an existing inferred resource of 1.1 Moz gold at 2.1 g/t gold, with excellent exploration upside. "We still need to do more drilling and feasibility studies but the work done to date indicates it will fit into our production profile by the end of the third year and increase our current production output with a low capital expenditure," explains Hyde.

300 000 oz

The volume of gold expected in Sanbrado's first year of production

At a time when some companies are practising caution regarding new acquisitions, Hyde says it was the optimal time to acquire Toega. "To bring a satellite project such as Toega into Sanbrado's production profile, it should take about two years. We have experience with Sanbrado so we know we have a busy period ahead with additional drilling, feasibility studies and environmental and social impact assessments, so that's why we decided to go ahead with the acquisition now."

Infill drilling at Toega is expected to commence in late Q3, 2020, wet season and COVID-19 restrictions permitting, with a range of other technical activities being conducted in parallel or commencing over the next 20 months. There are also plans to begin deep drilling at M1 South beneath existing reserves as soon as the COVID-19 conditions in Burkina Faso improve.

Hyde is confident that WAF will continue to achieve success at Sanbrado and in Burkina Faso. "Given the fact that we are six months ahead of our original schedule and 10 weeks ahead of our updated schedule shows that operating in Burkina Faso is pretty straightforward – provided you abide by the regulations – and you can achieve some timetables that you may not be able to achieve in other mining jurisdictions such as North America or Australia.

"Also, for a first time company in the country, we have learned a lot and this will make further ventures in the country easier for us," Hyde concludes. MRA

Making underground progress at M1 South

Khoemacau

A major new copper and silver mine on the horizon

Mid-2021 will see Botswana celebrate the official production start-up of the new, large-scale Khoemacau copper and silver project – **Khoemacau**, owned by private company **Cuprous Capital**, which in turn is owned by **Cupric Canyon Capital LP** and **Resource Capital Fund VII LP**. Not only will this project generate significant financial benefit to the company as it starts to generate revenue, enabling it to implement expansion plans, but it will deliver substantial economic benefit for the country as well, writes **LAURA CORNISH**.

The US$400 million, 100% owned Khoemacau copper project is situated on the Kalahari Copperbelt and forms part of a 4 040 km² land package that Khoemacau Copper Mining owns. It represents the start of what could ultimately be a widespread mining complex for decades to come.

"At present, we are focused on developing Khoemacau's high grade Zone 5 resource – referred to as the 'Starter Project' – which is aimed at producing first concentrate by mid-2021 and thereafter building up to its nameplate throughput of 3.65 Mtpa producing +60 000 tpa copper and 2 Mozpa silver, with both payable metals in concentrate. Based on resources of 92 Mt, delivering these volumes equates to a long operating lifespan in excess of 20 years," says Chrisjan van Wyk, project director for Khoemacau Copper Mining.

Zone 5 comprises a measured, indicated and inferred resource of 92 Mt of copper containing high grade +2% copper and +21 g/t of silver.

IN SHORT

The transition from construction to operation at Khoemacau will mark a major historical achievement for Botswana as it welcomes a major new mine, the first in many years.

The initial production targets however are just the start for the company. In the mid-term it aims to expand its production to over 100 000 tpa of copper and 5 Mozpa of silver in concentrate and in the long term up this even further to +150 000 tpa of copper and +6 Mozpa of silver by developing further resources, with grades in excess of 2% copper, in the area including Zeta North East, Zone 5 North and Mango, along with a potential expansion of mining at Zone 5.

↑ **Haka pump station**

"Through the delivery of a large-scale, underground mechanised mine (the first in the country), Khoemacau will start to build a long-lasting legacy in Botswana," the project director notes.

Engineering expert Fluor delivers

Fluor started providing services for Khoemacau in April 2017 which included: 1) project set-up and project alignment, 2) capex update, 3) detailed design for early works packages, 4) preparation and award of early works contracts and 5) preparation for early works. This was extended to include value engineering, optimisation, refinement of the capital costs, detailed engineering to support early works and a new level 3 schedule. An estimate workbook was also produced which provided a detailed account of scope and costs for the various work breakdown structures.

"In 2018, this transitioned into a full EPCM contract to further incorporate detailed design of the surface infrastructure, procurement of equipment (including the long lead equipment items) and construction management. Construction started with early works in late 2018 with construction completion scheduled (pre COVID-19) for early 2021," says Jim Picken, Fluor's Khoemacau project manager.

To date, the project has reached 50% construction completion with engineering and design approaching completion. All equipment has been ordered and a number of long-lead critical equipment has already been delivered to site.

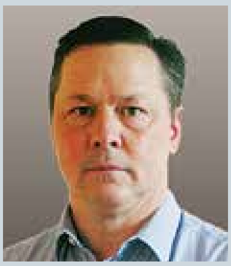
"The most significant achievement to date on the project has been the completion of the three boxcuts at Zone 5 and the commencement of underground mining development in each. The ore that will be extracted from underground will feed the Boseto processing plant which will produce concentrate (the revenue stream) that will be exported to global markets in 2021," Picken outlines.

Several other notable milestones have also been achieved that support the mining effort. These include the completion of the initial Zone 5 infrastructure (offices, workshops), diesel power generation and the overhead lines that distribute the initial power requirements on the mine site (prior to connecting to the national grid), a 40 km water pipeline that supplies borehole water to Zone 5, the occupation of the first phase of the permanent Zone 5 accommodation camp and the 35 km access road that links the neighbouring Boseto processing plant to Zone 5.

Zone 5 mine area

"Through the delivery of a large-scale, underground mechanised mine (the first in the country), Khoemacau will build a long-lasting legacy in Botswana,"

CHRISJAN VAN WYK



↘ **Boseto plant crushing** and screening area

←Boseto plant milling area

↓South boxcut

The existing Boseto processing plant, which formed part of the acquisition of the Boseto mining operation, which Khoemacau acquired out of provisional liquidation in 2015, is another critical path area. It is being upgraded with demolition, civil, structural, sand blasting and painting construction activities in progress. Electrical and instrumentation works are ready to start. "Once completed, the plant's capacity will have been increased from 3 Mtpa to 3.65 Mtpa and will offer an enhanced flotation circuit and a new filtration plant, as well as refurbishment to the entire facility," says Van Wyk.

Through the Boseto acquisition, Khoemacau also gained access to an existing tailings storage facility which will be upgraded as part of the project and then utilised once Zone 5 is in production.

"Construction has progressed well across the widespread site and although impacted by COVID-19 pandemic spread reduction measures, construction has continued throughout the period of the Botswana lockdown with over 30% of construction personnel (+500) remaining and advancing construction," Picken reveals. The company also managed to keep all underground mine development activities on track through this period.

The next steps

There are a number of components that must come together to facilitate first production from Zone 5, Picken continues.

> "The relationship shared between both companies has been one of trust, transparency, respect and mutual understanding, which is ultimately a winning combination,"

JIM PICKEN

"The first of these is completion of boxcut construction and surface infrastructure necessary to support mining, both of which have largely been achieved as well as the start of underground mine development at each of the three box cuts. The remaining areas to be completed prior to realising first concentrate include the completion of the haul road between Zone 5 and Boseto, building an ore stockpile, completing the Boseto plant upgrade and connecting the project to grid-supplied power."

Achieving its milestones to date can be attributed in part to the close cooperation between Fluor and Khoemacau, Picken and Van Wyk agree. "Khoemacau has been transparent in their execution approach and have worked in a close, collaborative and integrated manner with Fluor. We have been agile in our response and flexible in execution to ensure our client's needs are met," Picken highlights.

"The relationship shared between both companies has been one of trust, transparency, respect and mutual understanding, which is ultimately a winning combination," he continues.

Phenomenal safety success

As of April 2020, in excess of two million consecutive safe work hours had already been performed on the project without a lost time injury (LTI). At the time of going to print, Fluor was confident of achieving its next major target – one year without an LTI, which is set for July 2020.

On site, this has been achieved through dedicated focus and interventions from the project management team and commitment from contractors, despite the lean staffing approach of a combined Khoemacau/Fluor construction management team, which has covered a widespread site that extends over 90 km.

1 670

The number of Botswana people Khoemacau employed during the construction phase

The long-term future

"The expansion being studied by Khoemacau would entail the establishment of a new processing plant at Zone 5 and is already within our foreseeable future," Van Wyk highlights.

"We are confident of achieving our goals of building a strong copper/silver presence in the country considering the excellent working relationship we have with the Botswana government and the various communities around the mine. This is a strong and economically robust project with great expansion prospects, which will deliver financial benefit to the company and of equal importance, to the people and government of Botswana," he concludes. MRA

PROJECT BACKGROUND

The Kalahari Copperbelt is host to several copper deposits and mining operations with many similarities to the Central Africa Copperbelt and Lufilian Arc in Zambia and the Democratic Republic of Congo.

Under the former ownership of Hana Mining, exploration primarily focused on the Banana Zone, which is situated in the lower south western end of the concession. When Cupric Canyon acquired Khoemacau in early 2013, the drilling focus shifted to Zone 5 to explore the ore body along strike and at depth to determine if sufficient resource material could be identified to support underground development. With early success, the exploration at depth continued, and a resource was identified that had the potential to support a feasibility study. The initial feasibility study was completed in September 2014.

Khoemacau went on to acquire Discovery Copper Botswana in 2015, the neighbouring mine to Khoemacau, and completed a feasibility study throughout 2015 which included a Zone 5 resource of approximately 92 Mt, the 3.65 Mtpa Zone 5 underground mine, 35 km of haul road and the upgrade of the Boseto processing plant, together with all the associated facilities, power and water infrastructure. Further optimisation of this 2015 feasibility study and detailed design work was undertaken from 2016 to 2018 (the project was termed the 'Starter Project' during this period) while capital was being raised to execute the project.

Battle hardened operator Perseus Mining

Pushing Yaouré closer towards production start-up

The rapidly approaching production start-up of ASX-listed **Perseus Mining**'s third mine, **Yaouré**, in Côte d'Ivoire marks a pivotal moment in the company's history – reaching the 500 000 ozpa target which CEO **JEFF QUARTERMAINE** has been aspiring to achieve for years. Despite the pressures of COVID-19, it's all systems go to achieve the first gold stretch target in December 2020, writes **LAURA CORNISH.**

Rewind time by three years and Perseus Mining was just a single mine operator, focusing on producing just over 200 000 ozpa from its Edikan mine in Ghana. Impressively, the company has quickly grown its gold producing profile – bringing its Sissingué mine in Côte d'Ivoire on stream in January 2018 and soon its Yaouré project as well – in essence more than doubling its annual production output in a short timeframe.

"Yaouré will be our biggest success to date," Quartermaine highlights. "Because it follows in the footsteps of our 80 000 ozpa Sissingué operation which we delivered so successfully, but on a much larger scale and with the same team that delivered our second mine in the country."

IN SHORT
Perseus Mining is quickly approaching its ultimate objective – to become a mid-tier gold mining company.

The new flagship

Once in production, the 2.2 g/t Yaouré will be Perseus Mining's new flagship mine. It will produce 215 000 ozpa in the first five years of its 8.5-year open pit lifespan – delivering the company with a 500 000 ozpa gold production from fiscal year 2022 onwards. The production target will require 3.3 Mtpa of process plant capacity.

The mine is situated in central Côte d'Ivoire, 40 km from the capital Yamoussoukro.

At an all-in-sustaining-cost of US$750/oz, the project is economically attractive in a $1 250/oz price environment (with an IRR of 27%),

although we will benefit financially well above this should the gold price continue to sit so high above this mark," Quartermaine notes.

To ensure a lifespan that extends well beyond eight years, Perseus Mining has already delineated an underground resource off the side of Yaouré's main CMA pit. A scoping study completed in 2018 has clearly demonstrated the potential for underground mining from this area on a resource of 595 000 oz grading at a high 6.2 g/t, which is open at depth and along strike.

"Not only will this improve the average grade of the mine but will potentially increase its lifespan to at least 10 years," Quartermaine confirms.

Over and above Yaouré's underground potential, Perseus Mining is working to secure additional open pit resources within close proximity to the known mine. "The area has an enormous amount of mineralisation and to date our drilling programmes are already delivering interesting intercepts which could equate to additional surface mining potential which again will extend the mine's lifespan."

Construction progress on track

Significant progress has been made on all fronts at the $265 million Yaouré project during Perseus Mining's March quarter. Costs at the time were reported as slightly under budget and overall development was 52% complete.

"We are dealing with the effects of COVID-19 as well as can be expected and are hopeful that travel ban restrictions will be lifted in the coming months which will ensure we meet our December 2020 production start-up stretch date. If not, Yaouré will likely produce first gold early in 2021," Quartermaine outlines.

> "We are looking for additional projects, either through a Greenfields discovery, or through an acquisition,"
>
> **JEFF QUARTERMAINE**

Beside travel restrictions, on-site construction work from the 1 600-strong team of contractors is progressing under a new normalcy – adopted by the company quickly when lockdown rules were implemented. The company has demarcated different areas around the site with different levels of restrictions and is only allowing personnel on site who have been through a quarantine process first.

Plant engineering was 100% complete in the March quarter and procurement work (including delivery to site) was on schedule at 85% complete. Critical equipment items – both the SAG and ball mills were delivered to site ahead of schedule in February 2020. During the quarter, procured items moved efficiently through the port of Abidjan in Côte d'Ivoire and at this stage, deliveries to site are taking place on a regular basis, largely unimpeded by the COVID-19 crisis.

Full-scale construction of the processing facilities and associated infrastructure which began in October 2019 are now proceeding in full swing, with various important aspects of the plant ranging from 60% completion to over 90% completion.

"We will receive our power from the Ivorian Electric Company main grid from September 2020," Quartermaine confirms. This has required investment in supporting infrastructure including the construction of a two new substations which were in March 56% and 8% complete. Transformers were shipped to site during the March quarter and fabrication of the transmission line and towers was completed and the bulk of materials delivered to site.

At quarter end, the new camp tented area was complete with 120 persons currently living in this accommodation. Finalisation of landscaping and permanent buildings is expected to be complete by

Tailings storage facility site overview

Primary crusher foundations

the end of the June 2020 quarter, at which time a total of 637 construction or 227 operations residents will be accommodated at this facility.

1 MILLION LTI-FREE HOURS

A significant milestone achieved at Yaouré in the March quarter

Operations readiness planning and implementation

Important progress was made during the March quarter in preparation for a seamless transition from development activities to operations at Yaouré by the end of 2020.

A workforce plan has been finalised and the recruitment of key employees has begun. It is envisaged that by the end of commissioning, Perseus Mining will have recruited approximately 285 direct employees at Yaouré, 90% of whom will be national employees and 10% expatriate employees.

Initial discussions have taken place with the Institut National Polytechnique in Yamoussoukro about the provision to provide aptitude and trade related testing of potential candidates for roles at Yaouré. A longer-term partnership with the Polytechnique to deliver vocational and degree level training and development for Perseus's employees and possibly also local students selected from villages in the catchment area around Yaouré is also being assessed.

Mining contractor EPSA Internacional SA (EPSA), a privately owned global earthmoving and mining contractor from Spain, has commenced setting up its operations in Côte d'Ivoire and planning for their site facilities is advancing.

"After evaluating various tenders for the mining contract, we felt EPSA was best aligned with our requirements and our core values as a company. They also have a solid track record," Quartermaine highlights.

The company currently operates across 15 countries and importantly shares the same time zone as Côte d'Ivoire. "Their equipment and service offering was well priced and immediately available. Importantly, their emphasis on building and enhancing local communities matched our own local objectives. They will recruit locally and upskill as necessary. We will also look at partnering with them to establish fully fledged training facilities with simulators in the country as well."

Maintaining 500 000 ozpa of gold production

While Perseus Mining can comfortably maintain 500 000 ozpa of gold production for the next four years, which according to known resources will see Sissingué wind down, Quartermaine is already actively looking to ensure a longer term plan that will prevent a drop in output.

"We are looking for additional projects, either through a Greenfields discovery, or through an acquisition. We are in a strong cash position, especially as Yaouré comes on stream, and believe in continually investing in our existing projects while ensuring we reach a point of paying dividends to our shareholders. We are in a comfortable position to already be evaluating the next phase of Perseus Mining's future trajectory," Quartermaine highlights.

The company more recently extended the lifespan of Edikan to 7.5 years by revising its mining methodology and life of mine plan. It has also earmarked $15 million for exploration in the coming year in order to find additional reserves across its operations.

"We are a battle hardened operator and mine developer and will continue to deliver on the promises we make to our stakeholders. We will increase our production profile to 500 000 ozpa as we move forward and have even embraced how COVID-19 has impacted our business – teaching our employees to work more efficiently than we have done in the past," Quartermaine concludes. MRA

↑ Aerial view of permanent camp

↑ CIL tanks

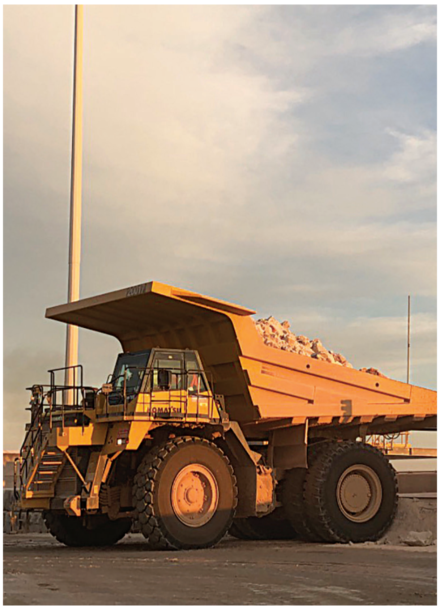
Earthmoving experts

EPSA is an earthmoving company with a global presence and over 50 years of experience in the industry. The company operates primarily in the mining and civil works sectors.

EPSA is proud of its team of people who strive together to achieve client goals based on a shared culture of: "Safety, responsibility, common sense and pride in a job well done". The company currently has a workforce of over 3 500 professionals, who are its most valuable assets. EPSA undertakes its work using its own plant and equipment. As a result, the company has the operational, organizational and material resources internally to execute each project. The full staff complement takes responsibility for ensuring these resources are both maintained and constantly enhanced.

The main objective at EPSA is to deliver world-class earthmoving and equipment maintenance services: incorporating environmentally responsible practices in all its projects, while setting goals to achieve ever increasing efficiency. The company knows that success depends on its people. It relies on highly experienced, specialised professionals who are able to get the most out of each project. This is a complex task which requires deep and wide-ranging knowledge of plant capability, efficient operations, equipment renewals, planning and project management in order to deliver the comprehensive, high-performance, global service demanded by its clients.

EPSA's maintenance team is a key component in the global network of earthmoving services offered by the company. It relies on state-of-the-art, next-generation plant and resources and, most especially, a highly-specialised maintenance team. Through rigorous detailed planning, the company generates a specific maintenance programme tailored to each piece of equipment. In this way, EPSA benefits from high utilisation rates of mechanical plant and equipment as it works to attain its goals.



EPSA first began working in the mining sector in 1976 when its services were required at an open-pit mine. Since the very beginning, the company has paid particular attention to matching the machinery with the specific requirements and execution schedules at each mine. It also ensures a high degree of equipment availability so it can guarantee clients that their production objectives will be met. The company achieves this through close and constant communication with them. **MRA**

Thor Explorations

Segilola delivers on first mover advantage in Nigeria

Groundbreaking ceremony of the Segilola project
The Hon. Minister of Mines and Steel Development Olamilekan Adegbite standing with CEO Segun Lawson

TSXV-listed West African junior **Thor Explorations**, winner of *Mining Indaba*'s **Investment Battlefield** in 2018, is proving this accolade well deserved. The company has made significant progress towards developing its flagship **Segilola** gold project in Osun, Nigeria. This is on track to pour first gold in Q2, 2021 and is unlikely to be impacted by COVID-19 as it moves towards this timeframe target, CEO **SEGUN LAWSON** tells **LAURA CORNISH**.

The delivery of first gold from Segilola will be a proud moment for Lawson – who is not only the CEO of Thor Explorations but also its founding member. Even though the company has a variety of early stage projects in Senegal and Burkina Faso, Segilola is and will for some time remain the company's sweet spot considering Lawson is a British born Nigerian: "With my geological background and full understanding of the country, I have always known the project would be a company and country defining success story," he begins.

Having acquired 100% of the project in August 2016, Thor Explorations' status shifted from an early stage explorer to a company with a tangible asset which already offered a proven resource and quality gold ounces.

IN SHORT
Nigeria may not be considered one of the top mining investment destinations in Africa, but with an economically viable project, securing cash to develop projects will not pose any challenges.

Segilola on the investment map

Under Lawson's guidance, the company has been pushing the project forward ever since taking ownership of it – completing a pre-feasibility study in October 2017 and a definitive feasibility study (DFS) in February 2019. "The success we had in undertaking and concluding the DFS for what has revealed itself to be an economically favourable project, can largely be attributed to the publicity we secured in winning the Investment Battlefield to showcase our project's potential," Lawson confirms.

"The exposure put our company and our project on the map – and saw us secure our first North American investment, Sprott Capital Partners, who lead a US$8 million investment towards completing our DFS in September 2018."

The next step, securing the cash to take the project forward into full construction – $100 million – has not been easy to secure. The company, in April 2019, received investment committee approval from and executed an agreed term sheet with the Nigeria-based Africa Finance Corporation (AFC) for a $78 million financing package for the construction and ramp-up of Segilola.

The total $78 million funding comprised a $54 million senior secured credit facility, a $9 million gold stream prepayment and a $15 million equity investment from AFC as well. "Again, another proud moment for the company in securing a Pan-African multilateral development finance institution," Lawson notes. The total funding package from AFC was increased from $78 million to $86 million in April 2020.

Some of the balance necessary to take the project forward was secured in the same month when Thor Explorations received a commitment from China-based Norinco International Cooperation for 10% financing of the $65 million lump-sum turnkey, engineering, procurement and construction (EPC) contract value awarded to the company to develop the mine. Norinco is an incorporated company affiliated to China North Industries Corporation. The company is listed on the Shenzhen Stock

Exchange with a market capitalisation of CNY 6.3 billion ($930 million).

Norinco has built projects in multiple industrial sectors in Asia, Africa and Europe and according to Lawson has developed a close and transparent working relationship with Thor Explorations.

Having since then secured the necessary cash to move into construction through private share placements, the company made the final investment decision to proceed with construction of the project in April 2020. It has also followed the implementation of COVID-19 procedures on site, established in accordance with industry best practice and the guidelines set out by the Osun State government and the Ministry of Mines and Steel Development.

"We have benefited enormously from working with a China-based contractor who has brought with it the risk mitigation procedures established in what is recognised as the virus originating country. Our camp is isolated and we are maintaining social distancing and conducting temperature checking. We have also teamed up with a local accredited laboratory with access to testing as we require. This has worked well for us to date and we are confident of meeting our Q2, 2021 start-up deadline," Lawson highlights.

> "This project is the first of its kind in Nigeria, a country where we believe there is considerable geological potential,"
>
> **SEGUN LAWSON**

A closer look at Segilola

As of mid-May 2020, Norinco was making steady progress. Site clearance had been completed and civil works on the plant site was underway. Construction of the camp was approaching completion and all ancillary infrastructure, including access roads and a water storage dam, was underway. Long-lead items had been ordered and will be manufactured in China.

Based on the DFS outline, Segilola will comprise an open pit mine and a new 625 000 tpa processing plant, which will consist of a conventional crushing circuit, two stage grinding, gravity, carbon-in-leach, elution, electro-winning and smelting to produce high purity gold doré.

"We are projected to produce 100 000 ozpa in our first operating year and an average of 80 000 ozpa over the mine's current five-year open pit lifespan – averaging around 4.2 g/t. At a gold price of just $1 300/oz, this equates to a post-tax NPV5% $138 million, 50% IRR and payback of less than 1.4 years, producing at an all-in-sustaining-cost of $622/oz. The project economics are even more attractive at current gold prices with a payback of less than one year and an IRR of 70%.

During construction a 400 kW and 200 kW diesel generator will be installed by the contractor at the processing plant and at the camp. The permanent main power supply for processing will be provided by seven 1.2 MW compressed natural gas (CNG) generators, five of which will be on duty and two on stand-by. Emergency power will be provided by a 640kW, 50Hz diesel powered generator.

The planned 43 ha open pit was determined through an iterative process of optimisation and design work and is 1 600 m long, 140 m to 430 m wide, and ranges between 55 m and 210 m in depth. Three pushbacks are planned utilising an excavator and truck fleet for both ore and waste. A large part of the mined material will require drill and blast.

Mining operations will last for 45 months, with processing continuing for 19 months thereafter. Sizable stockpiles are created, allowing processing to continue for some time after mining ends. Mining in advance of the processing demand allows the ore supply to be smoothed out and also allows better grades to be processed earlier in the overall schedule.

A detailed mining schedule has been developed that requires minimal pre-stripping prior to plant commissioning. Production will initially commence from the high grade northern pit that outcrops at surface and, along with the Stage 2 pit that commences after nine months, will return an average head grade of approximately 6.3 g/t for the first 12 months of operation.

Stage 3 commences in month 14 upon the completion of Stage 1, with a cut back of the southern wall of the Stage 2 pit to the final pit design. The mining schedule incorporates stockpile management such that processing plant feed grade is smoothed in order to optimise project cash flows.

Plenty of upside

There are two legs to Segilola's upside value – the first lies in securing additional open pit gold ounces.

"We have capitalised on our first mover advantage in Nigeria and picked up an additional two exploration licences in the last 12 months in Nigeria which cover a combined area of 344 km²," the CEO notes.

The licences cover a strike length of 20 km over the highly prospective gold-bearing Ilesha Schist Belt and the immediate northern extensions of the Segilola gold trend.

100 000 oz

The amount of gold Segilola will produce in its first year of operation

Thor's exploration tenure in Nigeria now comprises nine exploration licences. Together with the mining lease over the Segilola gold deposit, Thor's total exploration tenure amounts to 912 km² of the highly prospective gold-bearing Ilesha Schist Belt. "The incorporation of additional ore bodies into the Segilola operation is a short-term plan which could materially impact our project and we are confident of finding more gold," Lawson notes.

To date the company has two auger drills running on the tenement and has already picked up satellite soil anomalies.

Segilola's long-term future also lies in tapping into its underground potential. A preliminary economic assessment of an underground mine (below 200 m) has been completed and has already determined an initial three-year underground operation can be brought on during the open pit mine life to supplement the open pit ore with high grade underground production – taking the annual production rate of the mine up to about 110 000 ozpa, Lawson reveals.

"We have a high grade inferred resource which will supplement our mine perfectly." The deposit remains open below the resources considered in the underground project.

↑ Aerial picture of construction camp

In conclusion

"Nigeria needs a great success story to help build its mining industry and our commitment to establishing the country's first large-scale gold mine will do just that," Lawson enthuses.

The company aims to employ about 400 local Nigerians once operational, which will have a much bigger impact on direct employment opportunities downstream.

"This project is the first of its kind in Nigeria, a country where we believe there is considerable geological potential. The initial project economics are excellent and we have the right team in place to build, operate and capitalise on our first mover advantage in Nigeria and we have every confidence of producing first gold as promised," Lawson concludes. MRA

↑ Admin building foundation work

Theta Gold Mines

Clear growth strategy secures bright future

ASX-listed gold developer **Theta Gold Mines** is making headway with its plans to redevelop +620 km^2 of gold-bearing tenements that it owns within the Transvaal Gold System in South Africa's Mpumalanga Province. With a clear execution strategy in place, the company aims to initially unlock 2.8 Moz of its 6 Moz gold resources by bringing four mines into production within the next four to five years, starting with the Theta Starter open pits project. **CHANTELLE KOTZE** spoke to CEO **GEORGE JENKINS** on how the company plans to execute this strategy.

IN SHORT
Theta Gold Mines has released an optimised feasibility study that significantly improves the metrics of its Theta Starter open pits project as part of its development plan which is targeting 150 000 ozpa of gold production.

Near the towns of Sabie and Pilgrim's Rest, 43 historic gold workings now lie dormant, having been mined over a century ago during the gold rush that began in the 1870s.

Historically developed as underground mines via adit entry from gold outcrops at surface, Theta Gold Mines plans to unlock the remaining, yet plentiful, gold resources in the area using modern-day mining techniques and minerals processing methods. The company plans to initially delineate and mine high-grade opencast resources, before moving into the development of shallow underground mining operations thereafter, explains Jenkins.

Despite the deepening global impact of the COVID-19 pandemic, and the restriction of movement owing to South Africa's lockdown regulations, Theta Gold Mines has continued to advance the technical work stream required to bring the project into production. The ongoing technical work that the company has been advancing includes the finalisation of a number of the project's key contracts. This includes the progress of the mining contract through to a final document with a preferred contractor, amending of the environmental impact assessment to be in line with the optimised mine plan and the progression of discussions with five engineering firms tendering for the lump sum turnkey gold plant construction contract.

Following the completion of the feasibility study in May 2019 and thereafter a number of specialist study work streams, the company released an optimised feasibility study for the Theta Starter open pits project in April 2020, which is the culmination of all of the former work conducted.

Compared to the May 2019 feasibility study, the optimised plan has a reduced environmental footprint, reflects an increase in the production rate from 500 000 tpa to 600 000 tpa and increases the overall mine operational flexibility.

Of notable interest, the optimised plan has reduced the payback period from 14 months to eight months, increases the mine life from five to six and a half years and adds an additional 40 000 oz of gold to the original feasibility study from 219 000 oz to 260 000 oz over the life of mine.

Five year, four mine plan at a glance

Theta Gold Mines has a five-year plan which targets four mine developments, unlocking 2.8 Moz of its total 6 Moz gold resource and targeting 150 000 ozpa of gold production.

The four mines to be developed as part of the plan are:

- Theta Starter open pits (within Mining Right 83);
- Theta Southern Extension (open pits within Mining Right 341) (together with the Theta Open Cut project);
- Rietfontein shallow underground (within Mining Right R358/10161); and
- Beta shallow underground (within Mining Right 83/330).

The ore that will be mined at these four operations is planned to be processed within the permitted plant footprint area, where a new 600 000 tpa CIL plant will be established. This plant can be readily doubled to accommodate 1.2 Mtpa of oxide ore with a modest capital expenditure (by building a new CIL stream and purchasing an additional crusher) and minimal operational downtime.

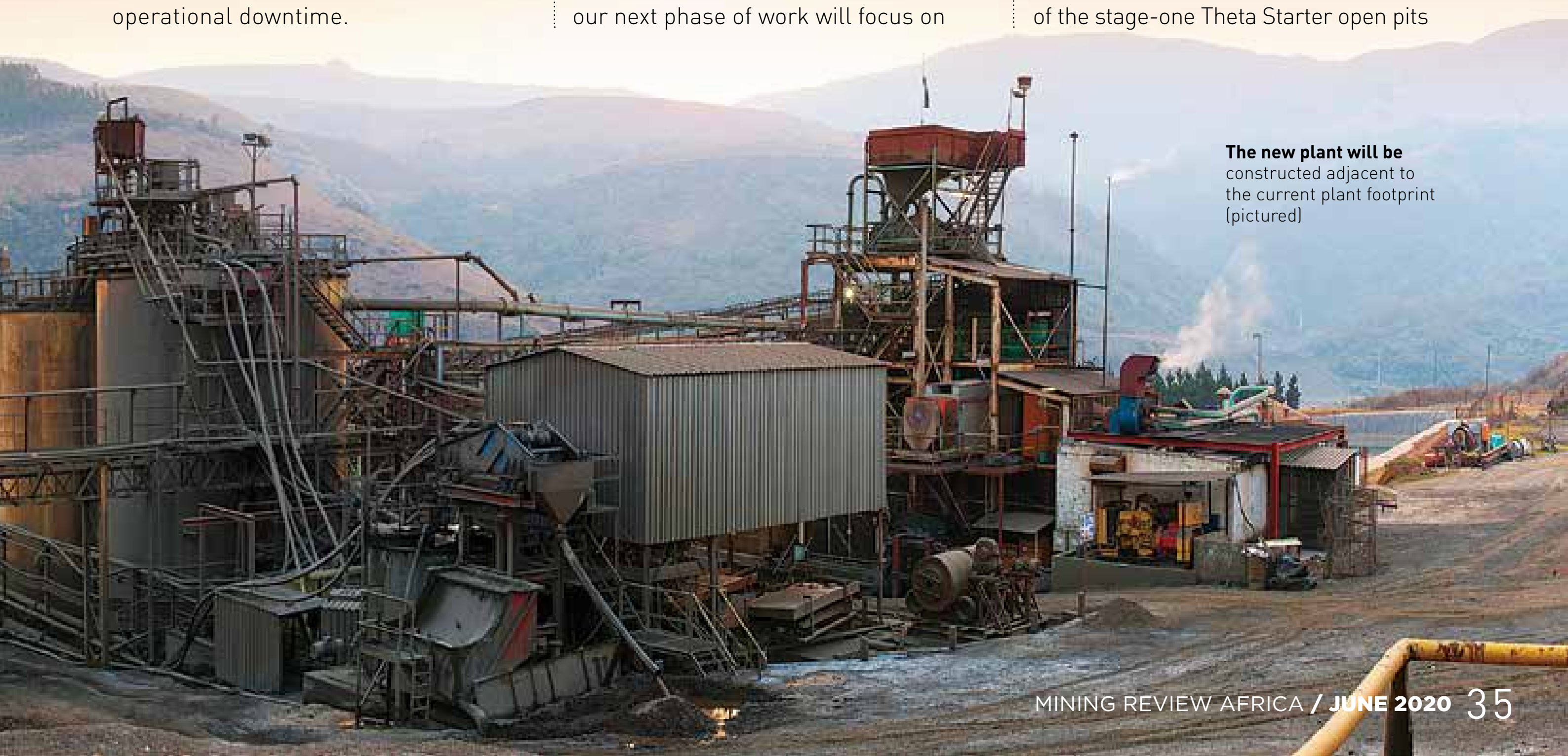
Current plant on existing plant footprint

"Expansions for the processing of underground ore can also be readily achieved within the permitted plant footprint to complement the new 600 000 tpa plant as an additional sulphide processing stream within a single processing plant footprint," explains Jenkins.

"Our current plant is only constrained by the available annual tailings deposition rate of 600 000 tpa for a total of 2.5 Mt. While sufficient to meet the needs of the Theta Open Cut project, our next phase of work will focus on expanding our tailings deposition capacity," Jenkins notes.

The Theta Starter open pits project includes the Columbia Hill deposit and part of the Theta Hill deposit within Mining Right 83 (MR83) in the Pilgrim's Rest area, explains Jenkins. He notes that it is not only the company's introduction into gold mining in the area, but it is also being used as a springboard into our broader five-year plan, says Jenkins.

During the development/construction of the stage-one Theta Starter open pits



The new plant will be constructed adjacent to the current plant footprint (pictured)

↑ **Exploration team** processing drill samples

within MR83, the company will prepare for reserve drilling into MR341, as part of the second mine development – Theta Southern Extension – targeting a combined ore reserve in excess of 500 000 oz and extending the life of the combined project, dubbed the Theta Open Cut project, to 11 years.

The third mine (and first underground mine) to be brought into development will be the Rietfontein shallow underground mine within Mining Right R358/10161, near Sabie, which has a mineral resource of 780 000 oz grading at 8.4 g/t of gold. This will be followed by the fourth mine, the Beta shallow underground mine, which sits directly adjacent to the processing plant near Pilgrim's Rest, and which has a large 1.1 Moz mineral resource grading at 6 g/t of gold.

Additional upside potential

Rich in historic data, the Transvaal Gold System lacks any form of modern-day exploration and, funding dependent, Theta Gold Mines aims to conduct a regional exploration across its tenement holding.

"In the process of conducting the 19 000 m exploration drilling campaign on the Theta project, our knowledge and understanding of the geology in the area was significantly expanded as the drill campaign revealed new geology, and the discovery of two new gold reefs that were previously mis-identified and misnamed. This further solidified the importance of undertaking additional regional drilling on site," says Jenkins.

Theta Gold Mines contracted CSA Global to analyse the regional geology to better understand the geology surrounding the Theta project and to help identify target areas for exploration drilling to extend the resource even further.

> "The Theta Starter open pits project is not only our first introduction into gold mining in the area, but it is also being used as a springboard into our broader five-year plan,"
>
> **GEORGE JENKINS**

While the company's focus remains on advancing the larger Rietfontein and Beta mines, where historic data is readily available, allowing for quicker advancement, there are several other historic mines on the company's list for further work.

Next steps

For the remainder of 2020, Theta Gold Mines will continue with project execution and operational readiness planning as well as the selection of the two key contractors. For the longer term, the company will examine expanding its drilling programmes to increase the mining reserve to support a larger production profile as more mines are brought on line.

Theta Gold Mines is targeting plant construction in Q1, 2021 with gold production expected in Q3, 2021. MRA

BALL MILL ARRIVES ON SITE

Theta Gold Mines took receipt of its 2.5 MW ball mill in March, which it purchased from a Glencore site in Rustenburg in October 2019. The new mill has been incorporated into the revised and optimised plant design and offers the project flexibility to easily expand production up to 1.2 Mtpa should the project expand.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Base Resources' Toliara project

Mammoth mineral sands mine in the making

IN SHORT
The Toliara project may have encountered some roadblocks, but these will be short-lived as Base Resources continues to bank its long-term future on bringing it into production.

ASX/AIM-listed junior **Base Resources** is looking to build a long and prosperous future through the development and operation of its US$595 million Madagascar-based mineral sands **Toliara Project**. With a substantial resource, and quality grades, it has the potential to far exceed the successes the company has achieved at its Kwale mine in Kenya, MD **TIM CARSTENS** tells **LAURA CORNISH**.

Base Resources' ability to secure a quality asset, develop and operate it while assisting local government to better understand how best to regulate its mining sector has been proven countless times over at its Kwale mineral sands operation.

Since operational start-up in 2014, Kwale has delivered on its operational commitments, in spite of commodity price movements and typical day-to-day challenges.

"Having secured Toliara in January 2018, a project which took two attempts to successfully acquire, we will take the lessons learnt and success parameters achieved at Kwale and apply them to the development of our new project – an enormous benefit considering both deposits share many technical parallels," Carstens starts.

Impressively, the 100% owned Toliara has a confirmed high-grade mineral resource of 1.3 Bt at a 5.1% heavy mineral (HM) grade, including 790 Mt at 5.8% HM in the measured and indicated categories, sufficient to support a 33-year mine life. Already, the company intends to expand the mine in its fourth year of operation.

"Not only is the Toliara resource nearly ten times the amount contained at Kwale (180 Mt) when we started mining, ongoing drilling on site is already showing that there is substantially more mineralisation in the ground. Our confidence in growing our resource moving forward is high and increasing our mine lifespan upwards of 50 years a very possible reality," Carstens outlines.

The figures Carstens quotes is according to the Toliara definitive feasibility study (DFS), completed in December 2019, which further highlights:

- DFS outcomes consistent with PFS, with no material changes to any metrics;
- Post-tax / pre-debt (real) NPV at 10% discount rate of $652 million, measured at final investment decision;
- Average revenue to cost of sales ratio of 3.15;
- Stage 1 capex cost of $442 million – to establish a 13 Mtpa mining processing operation;
- Stage 2 capex cost of $69 million – to increase the operation to 19 Mtpa;
- Mineral separation plant recoveries of 94.6% ilmenite, 79.4% zircon and 58.4% rutile;

- Annual averages (excluding first and last partial operating years):
  - Production of 780 000 t ilmenite (sulphate, slag and chloride), 53 000 t zircon and 7 000 t rutile;
  - Revenue of $248.2 million – 65% ilmenite, 32% zircon and 3% rutile;
  - Operating costs of $71.9 million or $76.9 million including 2% government royalty;
  - Non-operating costs of $7.1 million (community, external affairs, marketing etc.);
  - EBITDA of $164.3 million; and
  - Free cash flow of $132.4 million.

"It's clear to see just how central Toliara is for the company. Considering mining at Kwale could wind down at the end of 2022 unless extensions are granted, we view this project as our future and the start of building a bigger portfolio thereafter," Carstens adds.

Strategically, Base Resources is already working to ensure it does not convert back to a single asset, single jurisdiction company – meaning another acquisition is probable in the next few years.

Jumping hurdles but commitment unchanged

As is generally the case with any mining project development in a territory that does not have a well-developed or more mature mining industry, Madagascar is undergoing some teething problems in allowing Toliara to advance. "Despite a few encountered speed bumps, Base Resources remains 100% committed to this project," Carstens confirms.

In November 2019, the government required the company to temporarily suspend on-the-ground activity at Toliara while discussions on fiscal terms applying to the project were undertaken. Discussions to date have been positive but unfortunately have been temporarily halted due to the government's focus on and implementation of COVID-19 measures, including closing all ministries and public departments except for justice, security and health.

Coupled with community unrest and vandalism attacks at both the Toliara camp and nearby local villages – all of which have been resolved – a final investment decision (FID) on developing the project will be delayed beyond the original 30 September 2020 target.

↑ Base Resources is looking to develop Toliara as its new flagship asset

↑ Base Resources will focus on employing mostly local Madagascan people to run Toliara

980

The number of people Toliara will employ, of whom 98% will originate from Madagascar after several years of operation

"With the effective shutdown of government, international travel restrictions and broader COVID-19 measures and impacts both in Madagascar and globally, we can at this time only commit to providing a formal guidance on a revised FID date when we have greater clarity on the trajectory of resumption of global economic activity," Carstens notes.

The government needs to fundamentally understand the economics of the project. "Our DFS however, has clarified Toliara's economic stimulus and how the country will benefit from its production onset. There is also an exercise underway looking at potential broad changes to the mining code with sound advice and input being provided by the World Bank. Considering the low 2% royalty rate in the country, we are comfortable should government consider increasing this."

The way forward

While certain key activities off site will continue moving forward, the MD outlines three critical factors that need to take place in order to move the project to FID status. This includes government lifting its suspension of

TOLIARA INFRASTRUCTURE

Existing infrastructure required for the development of Toliara is limited. The project scope addresses this through building a dedicated, product haulage and access road, bridge, export facility, hybrid power plant, bore field for water supply and a permanent camp activities on site, the ability to travel to and from site and understanding how the banking sector will emerge from the COVID-19 crisis and what its lending appetite will be. "When we have clarity on these areas we'll have a more definitive timeline to present to the market," Carstens confirms.

The company will also require about nine months of preparation from this point to provide an FID. "I can at this stage confirm that our construction period has a two-year timeframe. Commissioning should start in month 21 and first product should leave the port about six months later."

Key activities planned for the coming months for Toliara include:

- Resource planning, schedule and budget reviews in relation to the delays caused by the COVID-19 pandemic;
- Continuation of FEED activities including:
  - Completion of work on tails pumping and metallurgical changes;
  - Completion of design criteria documents, basis of design, equipment lists and specifications;
- Continued development of the Toliara project's environmental and social management system;
- Subject to the lifting of the government suspension and COVID-19 travel bans, re-establishingon-site activities, including:
  - Environmental baseline studies and monitoring programmes;
  - Land acquisition/resettlement programmes;
  - Training programmes for local people ahead of planned construction;
  - Borehole drilling and additional geotechnical investigations (on and offshore) at the export facility, bridge and road to optimise designs;
  - Quarry material investigations;
  - Submission of outstanding drill samples for assay; and
  - Community programmes including relocation of tombs, resuming construction of schools and medical facilities; installation of solar pumping equipment into community boreholes, social economic baseline studies, human rights and health impact assessments.

→ **Drilling on site** at Toliara

↓ **Kwale operation**

"Not only is the Toliara resource nearly ten times the amount contained at Kwale when we started mining, ongoing drilling on site is already showing that there is substantially more mineralisation in the ground,"

TIM CARSTENS

Engaging with the community vital

Because the communities within the Toliara region are uneducated in their expectations regarding the potential new mine, Base Resources has made significant effort with educating, assisting and informing them to ensure the security of a social licence to operate.

Consultation programmes have commenced to improve information sharing, and bring communities and other stakeholders closer to the Toliara project. "We also want to give back to the community, especially during this COVID-19 period – and are looking to deliver on a smaller scale what we have given to our Kwale communities – donating PPE and financing the implementation of 100 ventilators as part of a government initiative to bring 200 into the country. It is important that through our efforts our communities see us as a respected contributor towards their long-term livelihood," Carstens concludes. MRA

KWALE OUTLOOK

Based on current reserves, Kwale's lifespan is due to end in late 2022, although this could be extended by a year if Base Resources is able to secure additional material located just outside of its mining lease. Having mined the Central and currently the South dune, a pre-feasibility study to mine the North dune is underway, and would give the company access to about 2.6 Mt of material, albeit at a lower grade. This could add another three or four years to Kwale. "There are also still a few more areas we're working on for access to undertake drilling to find better grade material," says Carstens.

Platinum Group Metals

Palladium market stands Waterberg JV project in good future stead

IN SHORT
Platinum Group Metals could soon receive the mining right for the Waterberg Joint Venture project, as COVID-19 lockdown measures in South Africa begin to ease.

The long-term market fundamentals for palladium remain robust thanks to strong demand on the back of a continued supply deficit. This equates to a bright future for the palladium-dominant Waterberg Joint Venture (JV) project, located on the Northern Limb of South Africa's Bushveld Complex, according to TSX-listed **Platinum Group Metals** (PTM) president and CEO **MICHAEL JONES**. **CHANTELLE KOTZE** reports.

In a shareholder webcast hosted in mid-May, Jones presented an update on the project's development, in which he noted that the South African Department of Mineral Resources and Energy should grant the mining right for the Waterberg Joint Venture project during June.

This latest milestone follows the completion of the definitive feasibility study (DFS) in September 2019, which was approved by the JV partners in December.

9.6 Moz
The amount of palladium that the automotive sector consumed in 2019 – representing 84% of total global demand

In February 2020, the Waterberg JV partners approved an amended purchase and development option agreement which would see Impala Platinum (Implats) fund the full R55 million implementation budget and work programme, aimed at increasing confidence in specific areas of the Waterberg DFS while awaiting the expected grant of a mining right and environmental authorisation. This is currently in progress.

As it stands, PTM owns 50% of the Waterberg JV, with Japan Oil, Gas and Metals National Corporation (JOGMEC) holding a 12% interest. The Waterberg JV is further supported by a group of investors including Impala Platinum (Implats) holding a 15% interest, diversified Japanese trading house Hanwa holding 9.7% and South African empowerment partner Mnombo Wethu Consultants holding the balance of the joint venture.

Upon the granting of the mining right, Implats has 90 days to decide whether to increase its 15% stake (and first right of refusal to its concentrate offtake) to 50.01% by buying an additional 12.195% equity interest from JOGMEC for US$34.8 million and earning a

The palladium-dominant Waterberg Joint Venture project is located on the Northern Limb of South Africa's Bushveld Complex further 22.8% interest by making a firm commitment to spend $130 million on development work.

Following Implats' funding decision in Q3, 2020, the Waterberg JV would begin decline establishment in Q1, 2021, with potential start of concentrate production in Q1, 2024, reaching a steady state of production rate of 420 000 ozpa of palladium, platinum, rhodium and gold (4E) platinum-group metals (PGMs) by 2027, over a 45-year mine life.

"The resource thickness and its shallowness (starting at 140 m below surface) makes the deposit amenable to bulk mechanised mining, allowing the resource to be accessed via lower-cost decline shafts as opposed to vertical shafts. This also allows the operation to move away from conventional, high-cost narrow reef mining, where economic and safety pressure in recent years has been forcing the closure of these types of mines," says Jones.

FAST FACT
The Waterberg project has proven and probable reserves of 187 Mt grading at 3.24 g/t 4E or 19.5 Moz 4E

The bulk mechanised mining nature of the deposit positions the Waterberg JV project at the bottom of the PGM industry cost curve, with an estimated all-in sustaining cost of $767/oz 4E. Jones explains that the productivity within a conventional mine equates to between 2 oz and 3 oz per employee per month, while the productivity within bulk mechanised mines equates to between 20 oz and 40 oz per employee per month.

The Waterberg resource also has a unique metal balance in that it is dominated by palladium, and also contains platinum, rhodium and gold as well as copper and nickel. The deposit also has low chrome content with a similar amount of base metals to other

Image: 123rf.com

INTERESTING TREND EMERGES

As global economic activity returns, following the easing of restrictions on movement, commuters are increasingly cautious of using public transport. This trend, Jones believes, may lead to a resurgence in the use of cars for personal transport.

DID YOU KNOW?
Palladium accounts for 63% of the total metal basket within the Waterberg deposit

concentrates in South Africa – making it a good Merensky reef replacement capable of being fed into most of South Africa's smelters.

A strong time for palladium

Palladium has continued to outperform its biggest rival – gold – to become the most precious of the precious metals.

In mid-May, the metal traded over the $2 000/oz mark since the COIVID-19 pandemic lockdowns (after hitting a record high of $2 800/oz in February) on renewed optimism about China's economy reopening and planned stimulus for vehicle manufacturers.

Palladium demand has been primarily driven by the automotive industry and the metal's use in the manufacture of emission-reducing catalytic converters.

While the global automotive industry shut its doors in response to the COVID-19 crisis, so too did palladium production in South Africa (which accounts for about 38% of global mine supply) come to a halt, explains Jones.

As a result of this correlation in the halting of both production and demand, analysts are forecasting balanced or continued deficits in 2020, with deficits expected to grow in the near-term and the long-term.

Despite its relative rarity, mined mainly as a by-product of nickel and platinum mining, palladium is the dominant and most abundant of the PGMs within the Waterberg metal basket, which comprises 63% palladium, 29% platinum, 6% gold and 2% rhodium.

> "The resource thickness, and its shallowness (starting at 140 m below surface) makes the deposit amenable to bulk mechanised mining, allowing the resource to be accessed via lower-cost decline shafts as opposed to vertical shafts,"
>
> **MICHAEL JONES**

↗ The Waterberg metal basket, which comprises 63% palladium, 29% platinum, 6% gold and 2% rhodium

↓ The project is expected to produce 420 000 ozpa of palladium, platinum, gold and rhodium

PGM battery technology potential

Launched in 2019, PTM and Anglo American Platinum (Amplats), in partnership with Florida International University, launched a new venture, Lion Battery Technologies, to accelerate the development of next-generation battery technology using platinum and palladium.

"The possibility of creating additional demand for platinum and palladium in the battery technology space is an exciting development and of strategic importance to both parties," says Jones.

While the current view of the automotive sector is that the cost of using PGMs in a battery is too expensive, Jones notes the importance of calculating and weighing up the cost of current battery material inputs (nickel, cobalt, manganese) used in current batteries. While similar in cost, the real value lies in the weight saving – as a fraction of PGMs, when compared with other battery materials, is required, he explains.

The research being undertaken within Lion Battery Technologies aims at using platinum and palladium to unlock the potential of lithium-air and lithium-sulfur battery chemistries to increase their discharge capacities and cyclability.

Research to date has shown that the use of PGMs as a catalyst in these batteries has been able to prevent some of the issues that reduce a battery's cyclability.

"We are most advanced with our research into lithium-sulfur battery chemistry and have filed additional patent applications for this particular technology," says Jones.

While still at laboratory-stage, this technology development holds significant upside potential for PTM. "Should EVs become an important part of the vehicle market, palladium could become a crucial input in the manufacture of this battery technology," says Jones. MRA

Purpose before profit

Investors attracted to a green economy

Historically, investing has been driven by quick gains with less emphasis on social and environmental risks. However, as consumer behaviour changes, there is an increasing awareness of investing responsibly in the green economy. **GERARD PETER** spoke to **JON DUNCAN**, head of responsible investment at **Old Mutual** about how this impacts mining companies seeking investment.

Image: 123rf.com

Duncan heads Old Mutual's Responsible Investment Programme which is focused on driving the systematic integration of environmental, social and corporate governance (ESG) issues across the entire company.

Duncan has seen an increasing appetite for these investment products as customer habits change. And while the ESG indices that Old Mutual has been putting into the market have also taken a knock because of the current volatility of worldwide markets, the impact has been less than benchmark figures.

According to Duncan, previously, ESG policies may have just been a compliance box-ticking exercise for many companies but this is now changing. "There is an emerging narrative that businesses who will do well in the future will be those whose profit streams are aligned with green economy outcomes such as low carbon emissions, resource efficiency and being socially inclusive."

He adds that this economic transition has in part been hastened as a result of COVID-19 and that the investment policy environment is now tilting towards green economy outcomes. "COVID-19 is an exogenous shock to the market system – it is something that is external, unlike liquidity or other inside market risks.

> "COVID-19 is an exogenous shock to the market system – it is something that is external unlike liquidity or other inside market risks."
>
> **JON DUNCAN**

"This is a clear indication that our economy is susceptible to risks that emanate from the biophysical, social and governance system. For some time, we have muddled our way through poor governance and have accepted that it is both a function of the market and society but this pandemic is a very stark and powerful reminder that the market needs to take these exogenous risks into account."

Still an appetite for mining

Now, while mining's reputation may be tainted when it comes to the effects of operations on the environment and communities, Duncan says that this does not dissuade ESG funds from investing in mining. "When it comes to mining, we don't have a hard binary exclusion approach. Rather, we look at what commodities companies are mining and how well they mine those commodities."

Following a strategic commodity review, a mining company's operational ESG risks are then scrutinised, taking into account factors such as how its mining rights were acquired, if its tax disclosure is appropriate, its health and safety track record, how it provisions in terms of mine closures and the extent to which it delivers on its social and labour plans.

Furthermore, Duncan advises that a mining company must first get its strategy right from a commodity perspective and then ensure that the strategy appropriately prices all externalities, both environmental and social, and that executive reward is pinned against this long-term ESG risk.

"Going forward, societal expectations regarding the way mining companies operate will remain in focus and if anything, will be enhanced through our collective experience of COVID-19. As a long term investor, we know that investing in a way that creates short term returns while eroding long term system resilience is unstainable. Fortunately our experience shows us we can do both – generating appropriate risk adjusted returns while putting capital to work in a way that supports long-term sustainable social and environmental outcomes," Duncan concludes. MRA

DRDGOLD

Creating a positive environmental legacy in Johannesburg

With leading minerals processing technologies designed to extract the smallest nano-concentration of gold from tailings, JSE and NYSE-listed surface gold tailings retreatment company **DRDGOLD** is retreating sand dumps and slimes dams from Brakpan to the east of Johannesburg to Carletonville in the west, not only as its core business activity but also as a contribution to the environment and society. **CHANTELLE KOTZE** reports.

According to DRDGOLD CEO Niël Pretorius, the 'City of Gold' is a textbook example – in one sense at least – of sustainable development.

"Gold mining provided the stimulus for the development of a diverse economy in and around Johannesburg and operated in parallel with other sectors long enough for there to be a well-established economy once it, to all intents and purposes, was gone.

"But Johannesburg's early gold miners, much like their counterparts elsewhere around the world at the time, extracted what gold they could with the basic technology available to them from the ore they mined. They probably thought little if at all about the future environmental and societal impacts of the waste they created in the form of mine dumps on the emerging urban landscape.

"They could not have envisaged the level of human encroachment on mine dumps that would take place, both through social engineering that became embodied in apartheid and poorly managed urban development that continues even today. This has resulted in hundreds of thousands of people living in formal and informal communities, much too close to mine dumps for their comfort and convenience, never mind their safety and health.

"Our gold mining predecessors would probably be astounded – and hopefully impressed – by what DRDGOLD does today with what they left behind."

FAST FACT
DRDGOLD undertakes concurrent rehabilitation of all of its tailings facilities to manage current and future negative environmental impacts

Recently, environment, social and governance (ESG) factors have become the benchmark and model against which mining companies measure their sustainable development.

The awareness that has been created around ESG factors as a sustainable development measure – most recently driven by the investment community and its use of ESG criteria as a metric in its investment decisions – has been a positive move toward highlighting the importance of ESG as integral to responsible business practice.

Over and above DRDGOLD's business objectives, environmental management and rehabilitation are inextricably linked to the company's business strategy and are creating an increasingly compelling investment case for it.

"Our aim is to leave an enduring legacy in Johannesburg by removing old, abandoned, unmanaged or poorly managed mine dumps in urban areas; reprocessing them and redepositing the resultant waste in modern, well-managed tailings storage facilities; liberating valuable

Erection of windbreaks and the planting of vegetation on DRDGOLD's discontinued tailings deposition facility near Nasrec, south of Johannesburg, to contain dust pollution land for redevelopment; and thus making life better for communities," says Pretorius.

DRDGOLD spent more than R230 million on various rehabilitation activities (including controlling dust) in the five years preceding FY2019 in the greater Johannesburg area alone. Last year, the spend was R45.8 million: more than 35 hectares of tailings dams were vegetated to reduce dust emissions (with measurable success)

Reclamation of tailings from the Driefontein 5 Tailings Facility by a remotely operated high-pressure water jet, ahead of retreatment at Far West Gold Recoveries' DP2 plant to extract gold

and more than 135 hectares of land, previously sterilised by mine dumps, released for redevelopment.

With its Far West Gold Recoveries operation, acquired in the last two years from Sibanye-Stillwater, DRDGOLD is gearing up to have similar positive environmental impacts on the Far West Rand in years to come.

Setting the benchmark for tailings deposition

DRDGOLD's vision for the longer term is to create large, centralised storage facilities, remotely located, to contain the tailings that result from the sand dumps and slimes dams it reclaims and retreats. These will be designed from the outset – and managed through to closure and beyond – to the best modern standards available.

The company's Crown Tailings Complex, south of Johannesburg, will soon be a benchmark for concurrent rehabilitation, decommissioning, closure and management, once the three dams that form it are completely vegetated by 2023.

DRDGOLD is applying the lessons learnt at the Crown Tailings Complex at its Brakpan tailings storage facility (TSF). "We would like to be in a situation that by the time we deposit the last tailings onto the Brakpan TSF we have very little cladding and vegetation work left to complete," says Pretorius.

"While we began our cladding and vegetation at the Crown Tailings Complex 10 years before decommissioning, our cladding and vegetation methods and plan at Brakpan have significantly improved, focused on completing as much concurrent rehabilitation as possible.

"Having embraced our responsibility to the environment early on in the history of the business, we believe we can leverage this to become a concurrent rehabilitation partner to other mining companies," Pretorius concludes. MRA

A brighter future

Long-term support for learners

Mining investment company **Menar** believes strongly that education is key to ensuring a brighter future. Through its subsidiaries, it supports numerous initiatives to uplift learners and advance their educational endeavours.

These include running educational awareness seminars, developing infrastructure for rural schools and providing them with the tools and equipment that they require as well as improving hygiene and sanitation facilities.

Menar's subsidiaries include mining and exploration companies. They are Canyon Coal, with operations in Mpumalanga and Gauteng; Zululand Anthracite Colliery in KwaZulu-Natal; and Kangra in Mpumalanga (whose operation was recently placed on care and maintenance).

Learning and supporting the community

In January this year Canyon Coal purchased a new property for the Bonginhlanhla Stimulation Centre, in Middelburg, Mpumalanga, which caters for children with physical and learning disabilities. The company also facilitated the transfer and registration process of the property with the total cost of the project amounting to over R1.8 million.

Canyon Coal Social Labour Plan (SLP) Manager Melissa Pillay adds that the property purchased was previously used as a preschool. "The school has classrooms, toilets, and indoor and outdoor play areas which made it ideal for repurposing for use by the centre," she explains

Pillay recounts that Canyon Coal started working with Bonginhlanhla in 2015. The project formed part of the social labour plan commitments for the company's Hakhano Colliery.

During this time, the school was located at the Middelburg Care Village. Funding from Canyon Coal ensured that the centre could procure much-needed support and stimulation items, such as standing and walking frames, toilet and passage rails, educational material, crawlers, toys, mats and rollers for therapy, etc. This was handed over to the school in November 2016.

However, Pillay notes that shortly after the handover the school had to move out of the Middelburg Care Village. "Thereafter it approached Canyon Coal for further assistance, which is how this latest initiative came about.

"Education and development of children are always a priority for the company. Moreover, Bonginhlanhla caters for children who require special care and who largely come from underprivileged families, which is why our support was all the more necessary," Pillay points out.

Meanwhile, in May 2019 Canyon Coal handed over R1.45 million worth of renovated facilities to Beestepan Agricultural High School, as part of the SLP initiative for Singani colliery. The school is located in Middelburg approximately 34 km from Singani colliery. It is a no-fee public school with limited resources and caters for learners from the underprivileged surrounding communities.

Pillay explains that work on this project started in June 2017. "We were provided with a list of needs by the school's leadership and discussed how best we could assist them," Pillay explains.

Canyon Coal met many of the crucial needs of the school. These include extensive refurbishment of the school's workshop by stabilising and reinforcing the structure; maintenance to the classrooms; upgrading of the girls' and boys' toilets; purchasing of new tools to enable the learners to safely make full use of the facility to complete all curriculum requirements; and construction of two broiler units.

Raising of chickens in the broiler units forms part of the school's academic programme. The chickens are reared by the learners and sold to the surrounding community. This helps the learners to get an introduction to market dynamics while raising income for the school.

"The inclusion of schools as part of Canyon's SLP commitments has ensured that we can provide much needed resources that will assist in improving the teaching staff and learners' education environment. A better learning environment will make certain that the needs of the children can be met during teaching time. This is the first step to a better future for the learners and will have an impact on the development of a better South Africa," Pillay states.

Contributing to safer learning environments

Additionally, in May 2019 Kangra provided safe temporary ablution facilities to the Qalani Primary School to ensure its students are able to learn in a safer and healthier schooling environment. Qalani is a public school located in Saul Mkhizeville under the Mkhondo Local Municipality where Kangra is located. Previously, the ablution facilities at the school comprised old pit latrines that would often overflow with raw sewerage, posing a health and safety concern for the learners.

> "A better learning environment will make certain that the needs of the children can be met during teaching time,"
>
> **MELISSA PILLAY**

Principal MG Luthuli expressed her deep appreciation to Kangra Coal, stating: "The donation of the mobile toilet units is really appreciated as they have come as a great relief to the challenging situation that learners and staff at our school are faced with."

Furthermore, between October and November 2019, members of Zululand Anthracite Colliery's (ZAC's) Safety Department visited five local schools to raise the learners' awareness of some of the hazards associated with the summer season. The visits formed part of a joint initiative between ZAC's Safety and Environmental departments to ensure that learners have fun during the festive season, while maintaining their safety.

The hazards highlighted included, but were not limited to, drowning, snake bites, dangers of being struck by lightning, fishing in the mine dams, the risks associated with entering the mine premises; and climbing or riding on trucks while they are moving.

Menar MD Vuslat Bayoglu emphasises: "Menar is deeply committed to assisting local communities and youth in particular, when and wherever possible. This stands at the core of Menar and the group's subsidiaries' values." MRA

Raw materials certification and traceability

No time to lose momentum

By Dr Andreas Hucke, project director, CERA and head of raw materials sustainability at DMT

The COVID-19 pandemic has caused significant disruption to supply chains around the world. The raw materials sector has been hit particularly hard, with factories closing, mine sites mothballed, prices crashing, and consumer purchasing flattening.

The supply chains that manufacturers rely on for mined raw materials have been beset with a range of serious issues, from child labour to environmental degradation

But as concerns over security of supply begin to mount, will the environmental, social and governance (ESG) commitments readily advocated by mining companies, processers, traders and manufacturers alike over the past several years be revealed as core commitments or fair-weather aspirations?

In times of global financial uncertainty, we are all occasionally guilty of cutting back on our spending, prioritising staples over luxuries in an effort to conserve. Companies tend to behave very similarly in times of crisis, which serves to expose the departments, projects or initiatives they will most readily furlough as well as the standards that are most freely lowered. For efforts to achieve sustainability, it is a moment of truth.

The world was a very different place when we participated in the Mining Indaba at the start of February. Optimism was as abundant as the sunshine, with lengthy and passionate discussions on how to improve mining in 2020 drawing large crowds. I led several of them myself, convening a breakfast roundtable to discuss responsibly sourced raw materials and sitting on one of the programmed panels to discuss the new generation of solutions for responsible mining. Over that week, there was only one word on everyone's lips: sustainability.

In the months since, the COVID-19 pandemic has taken hold of the world's economy, health and security and the outlook couldn't be more different. Sustainability is once again the hot topic of discussion, but this time for very different reasons as the appetite for progress – exemplified by coalitions like the Mining Indaba – risks losing the momentum built since the introduction of the United Nations' Sustainable Development Goals (SDGs) five years ago.

In a speech given at the Petersburg Climate Dialogue last month, German Chancellor Angela Merkel urged the international community not to lose sight of climate, sustainability and environmental goals, exhorting countries to "push commitments forward strongly, because this is essential for us to have global success".

The Chancellor's intervention acts as a timely reminder for businesses too, emphasising that concerns over security of supply provide no justification for abandoning the standards we have worked so hard as an industry to institute. Put simply, environmental, social and governmental considerations cannot be dependent on economic stability. This is true for many industries, but the sustainability measures in the raw materials sector have been especially hard fought and would be especially hard to recapture. So, what is at stake and why would it be such a mistake to let standards slide?

To answer this question, it helps to clarify the ubiquity of the raw materials supply chain in everyday life. In 2019, figures show Apple sold over 850 000 iPhones every day and creating each one required upward of 20 individual raw materials and more than 60 individual elements. The same is true of much of the technology on which modern life is built. So, if you are reading this on a smartphone, use a laptop for work, or if you own an electric vehicle, you are holding the end product of one of the longest and most complex supply chains in the world.

However, the supply chains that manufacturers rely on for mined raw materials have been beset with a range of serious issues, from child labour to environmental degradation. But because of this complexity, it has been close to impossible for manufacturers and consumers to ensure that the production of these materials hasn't involved such damaging practices. It's true that some certificates do exist for raw materials in the same way coffee or cocoa beans can be marked 'Fairtrade', but there is virtually no consistency between each certificate which means there are wide margins for error in how sustainability is defined. This is the problem that the CERA programme has set out to solve.

CERA certification scheme unpacked

CERA is the first universal and comprehensive certification scheme for determining the sustainability of raw materials. CERA is applicable for every raw material and every country, allowing a single definition of sustainability to be used for the entire value chain. Working with CERA offers mining companies, processors, commodity traders and manufacturers alike a guarantee of sustainability in the products they handle. CERA not only provides the value chain with the tools to work in a way that doesn't carry human or environmental risk, it also helps responsible value chain actors to demonstrate that such an approach is possible.

The COVID-19 pandemic has revealed the fragility within the raw materials supply chain, and shown that harmonisation of certification, traceability and ESG criteria is more essential than ever – but striking the right balance is always going to be a consideration.

Speaking recently with Tyler Gillard, head of sector projects and legal adviser in the Responsible Business Conduct Unit of the Organisation for Economic Co-operation and Development's investment division, he told me that "the global supply chain disruptions caused by COVID-19 and related adverse impacts on workers and communities spanning health, livelihoods, human rights and business integrity pose serious challenges to certification schemes. Travel restrictions may make verification of responsible business practices more difficult".

More importantly, certification alone is often inadequate to mitigate identified risks, or to build the capacity of suppliers to conduct strong due diligence, a weakness that may be amplified by the disruptions and changes to supply chains brought about by COVID-19. With the right support from governments, business and civil society, however, certification schemes can function as points of entry for assisting impacted producing communities and managing the changing risk landscape.

Throughout these efforts, businesses sourcing raw materials and certification schemes should balance maintaining integrity and flexibility in their due diligence practices to cope with the current situation. In these conditions, we have an excellent opportunity to rethink how we approach certification and a perfect chance to institute CERA as a new programme that provides the value with a consistent standard, regardless of location, material or process.

The world will be very different post-COVID, but this means we also have a responsibility to reshape it for the better. The value we will now place on adequate personal protective equipment only reiterates the importance of preserving the health and safety of employees, which is a central concern of ESG commitments. Any reversal or lessening of these commitments would be devastating in the mining sector, so in this period we must redouble our endeavour to make every aspect of raw materials sustainability and certification as simple, consistent and transparent as possible. MRA

About the author

Since 1989, Dr Andreas Hucke has held a variety of roles at Germany-based international independent engineering and consulting company DMT. Currently the head of raw materials sustainability, Hucke also holds the following roles within DMT: senior engineer geologist, accredited expert for rockburst prevention and supervisor of the "Testing of Support Elements, Monitoring and Physical Modelling" team. Since 2016, Andreas has also been responsible for the Strategy Project Transparency at DMT, through which the CERA project first originated.

Image: 123rf.com

Judgement call

ESG reporting obligations in the mining sector

By Richard Blunt, Susannah Davies and Jo Hewitt, Baker McKenzie

The mining sector is increasingly exposed to economic, social and governance (ESG) risks. This includes concerns around emissions, water use, deforestation and community relations. ESG reporting obligations, and institutional and other investor interest in what resource companies are doing in this space, are rapidly multiplying.

Alongside these developments, actual and perceived non-compliance with ESG regulations and best practices have engendered activist shareholder protests and action against the parent companies of global mining groups.

ESG requirements are evolving from loose guidelines to mandatory, country-specific obligations to report and comply. Relevant legislation includes the Prevention and Combating of Corrupt Activities Act, 2004 (PCCAA) in South Africa. Further, many (often overlapping) voluntary codes and principles also exist, which can make it difficult, particularly for smaller companies, to determine exactly which principles to follow.

When considering which of the voluntary codes to subscribe to, mining companies should remember that by complying with applicable mandatory ESG requirements, they are likely already complying with certain of the voluntary codes, in which case it would be possible to sign up to such codes without increasing the overall existing scope of their ESG strategies. In addition, considerations around which of the voluntary codes will likely become hard obligations in the future will be relevant, as well as whether its investors are focused on certain codes in preference to others.

Shareholder activism on the rise

Investors and lenders are increasingly focussed on ESG factors when making investment decisions. This means that, in many cases, in order to access capital miners will need to demonstrate commitment to ESG concerns. Many larger investors will have in-house specialists in this area, but there are also indices and ratings which rank companies according to their actual or perceived ESG strengths.

Alongside the increased investor focus on ESG, certain lenders are also now prescribing particular ESG principles that a company must meet in order to receive funding. This places scrutiny on miners' management plans and how these will assist the company in meeting its key performance indicators. Other bodies, including the World Gold Council, are lobbying for insurance providers to become more involved in the ESG movement, in particular by requiring mining companies to uphold ESG principles in order to be eligible for insurance policies.

ESG factors have also led to a rise in shareholder activists seeking to influence a company's ESG performance.

In order to stay competitive in the market, it will be important for miners to properly engage with ESG and to build (and in some cases, publish) a clear and robust ESG strategy which speaks to both the mandatory and voluntary ESG standards and codes, but which also works for their individual business and overall strategic priorities. MRA

About the authors

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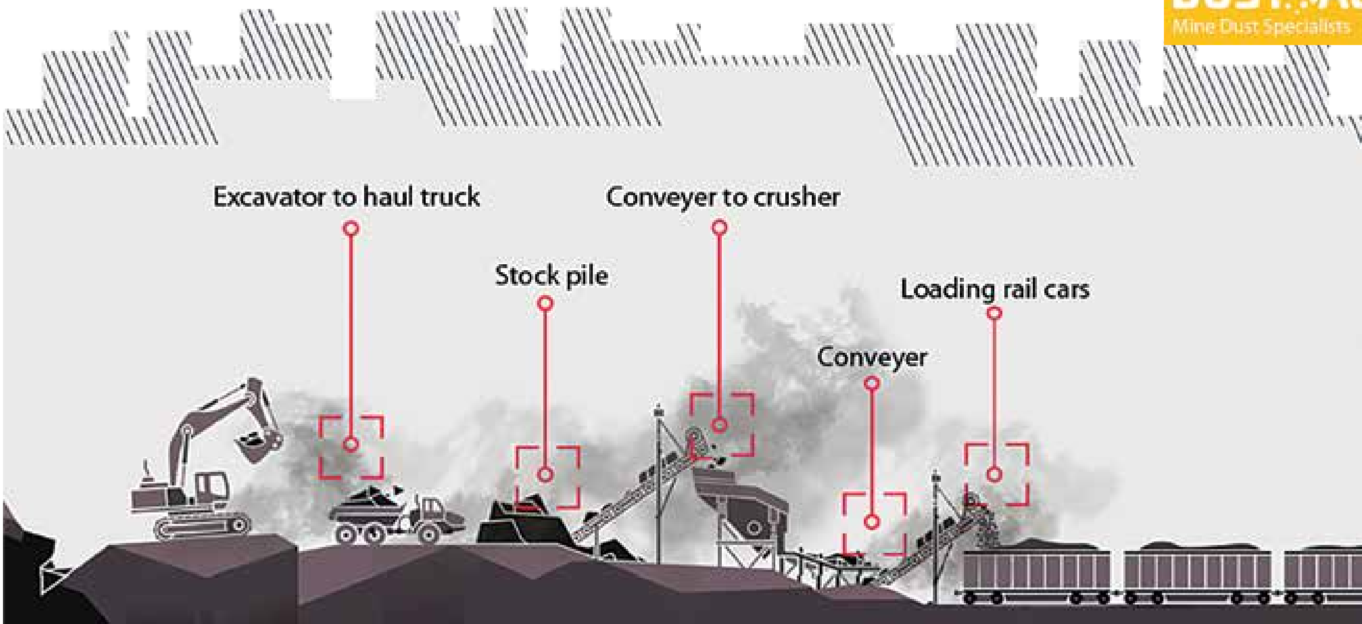

Dust-Act's pit-to-port solution

Optimisation requires a well-balanced, effective solution

Dust-Act has a broad range of custom designed dust suppression solutions specifically tailored for mining, industrial and agricultural markets.

Plant, fog cannon and haul road dust suppression should not only be viewed from a health, safety and environmental compliance matter, but also from a value-add perspective (ROI – return on investment). It is essential to understand that when selecting the correct dust suppression solution, there are significant value-add factors that affect ROI. To name a few:

- Reduced carbon emissions directly impacted by **reduced fuel consumption** and decrease in rolling resistance. (Thompson & Visser 2003)
- Reduced maintenance cost on operational equipment (haul trucks, etc.) as well as reduced auxiliary equipment (graders, water bowsers, etc.).
- Reduced water consumption for dust suppression directly impacted by frequency of application.
- Increased production (up-time) during or directly after rainy conditions.
- Extended tyre life due to improved haul road conditions. (Thompson & Visser 2003)

In addition to the immediate quantifiable savings, one can also look at the potential energy efficiency saving incentives as currently offered by the South African government – Section 12L energy efficiency rebate which has been extended until 2022 financial year-end (African countries to follow suit). Once the correct dust suppression solution has been applied to your operations haul road and ROI is realised, your haul road and dust suppression solution will no longer just be an expense but will also be converted into a linear asset.

Tailored for all environments

Dust-Act is cognisant that its solutions need to cater for various sectors of the market. The company's quality assurance programme is key to ensuring that the best solution is proposed. Historical meteorological data is reviewed, including various tests performed, during the initial solution selection, with specific attention given to:

- Water quality (road & plant solutions);
- Soil samples – road building/capping material (road solutions);
- Mineral composition analysis – hydrophobic or hydrophilic;
- Other related environmental factors (wetlands, communities, etc.).

In addition to new projects, Dust-Act strives to improve its previously installed systems by providing clients with augmentations to their existing systems.

↑ **Dust-Act: BDA500 treated haul road**

Dust-Act has steadily grown its market share from 2008, focusing on plant dust suppression systems, and expanded to offering road solutions in 2014. The Dust-Act Group of Companies has recently also expanded its operations into Africa and has concluded a contract with a Global Gold Mining Corporation with other projects soon to follow.

"We are proud to introduce various new measurement solutions to the market; the approach with these solutions is based on real-time monitoring. This will allow the end user to have a proactive approach when it comes to their operations, instead of a costly reactive or delayed response," explains commercial director Werner De Kock. MRA

The ESG of it all

Truly understanding its purpose

By Richard Garner, environmental HOD and Fulufhelo Makhani, environmental consultant at The MSA Group

The integration of environmental, social and governance (ESG) pillars into mainstream extractive business investing and governance is already well established. This was recently well illustrated at the 2020 Cape Town Mining Indaba as a key discussion topic. In 2019, an estimated US$20 trillion in investment assets globally were linked to some form of ESG data and reporting (Eccles et al., 2019).

While ESG is a new tool in sustainability integration for business, it is not the same as sustainability reporting and the two should not be confused.

The growing interest around ESG has been mainly for transparency in investor and senior management decisions. The key is whether ESG information is suitably understood and acted upon. This is often missed by ESG service providers and the investment committees and company boards using this tool.

ESG limitations and pitfalls

As good as ESG is for informing business/investor decisions, there are limitations and pitfalls inherent to ESG reporting that must be recognised. For example, the overlapping nature of some ESG aspects, as is the case where governance elements will often overlap with social and environmental.

Potentially this causes some duplication which is often "screened out" to keep reporting concise, resulting in information being presented in only one area of the ESG report. For the uninitiated, this could potentially convey the message that the issue is one-dimensional, resulting in its importance being underplayed.

ESG reporting may be weighted towards a particular element and based on historical rather than current information. An example would be a heavy focus on social development or anti-corruption. This can make ESG reporting biased and/or insensitive to new and changing issues outside of the normal. In an environment where significant and rapid change is becoming more likely, ESG reporting based on historical perspectives can be limiting. This is well illustrated using two examples: the mining sector focus on tailings management failures and the recent COVID-19 pandemic.

Putting ESG into practice

Tailings management in the extractive sector has always been part of risk management. Since the earliest memories of the Merriespruit tailings dam failure in 1994 to the more recent failures in China, businesses have had risk profiles of these facilities. However, not until the recent Vale Brumadinho dam disaster and the subsequent issues raised about management visibility, decisions and governance on high risk aspects become mainstream for ESG.

Driven by NGO pressures, investment risk demand and proactive business immediately initiated improved governance and ESG reporting in this area. This has now also been cross linked to other ESG areas such as climate change, safety and the impact on communities. One year on, and most extractive entities have tailings risk, governance and exposure imbedded in their ESG reporting. Has this addressed the issue? Yes, but reactively so and only because of highlighted understanding of this risk.

The COVID-19 pandemic is another matter entirely. Since the initial indications of an outbreak in China late in 2019, there have been drastic changes within the corporate arena regarding operations, exposure control and business function. These only became significantly apparent by March 2020 when country responses such as lockdowns and restrictions in trade emerged. However, the impacts of disease on business are not new and HIV-AIDS and others are already recognised ESG elements of several mining companies.

So, did ESG reporting pick this up? Unfortunately, not, and COVID-19 has managed to slip through the ESG net. There have been timely responses: i.e. the Public Investment Corporation who asked for supplementary COVID-19 reports on business preparedness and impacts as soon as the World Health Organization (WHO) announced the pandemic status of the disease. A valid response but retroactive.

ESG and the way forward

Recognising that ESG is only as good as the parameters used and the capacity of the audience to understand these is important.

We believe the solution to ensuring ESG remains a practical and effective tool for business lies in three key areas:

1. Effective ESG service providers: This requires the personnel doing ESG reporting to be connected to both the business and trending developments and to assist the client in establishing the right balance of ESG reporting and parameter selection.
2. Leading indicators: Emerging trends and risk indicators must be built into ESG reporting. This needs to be dynamic as some trends and risks will move quickly and not persist on the ESG agenda.
3. Investor and senior management enablement: Knowing that not all audiences for ESG are specialists or focused on all aspects of ESG is important. ESG reporting is not just data, but should also include a level of interpretation for the reader. MRA

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About the authors

Richard Garner holds an M.Sc. degree in ecology, and an advanced management development certificate through Gordon Institute of Business Science, plus an advanced social development social development certificate with University of Cambridge. He is a registered Professional Natural Scientist (Pr.Sci.Nat.), a Certified Measurement and Verification Professional in training and a Certified Water Efficiency Practitioner and Trainer with AEE.

After completing her B.Sc. (Hons.) in Geography and Environmental Studies in 2015 at the University of Witwatersrand, Fulufhelo Makhani went on to register for an M.Sc. degree which she then completed in 2019. She has gained over two years' experience in the consulting and research field.

Green energy for the Copperbelt

Ensuring sustainable and beneficial hydropower projects

By Amelia Briel, Environmental Section Manager, Knight Piésold

The expansion of mining in the Zambia-DRC Copperbelt has led to a severe shortage of electricity. With high annual rainfalls and large rivers, it makes sense that countries on the Copperbelt are turning to hydropower to address the additional demand.

Hydropower does not consume water but rather the water is used to turn turbines to generate electricity and then released back into the river. Private developers have identified the opportunity and are addressing the power deficit through hydropower projects in the region.

While hydropower is considered green energy, the impacts of these developments, power lines and access roads can have an immense environmental and social impact. It is for this reason that an environmental and social impact assessment (ESIA) that utilises a multi-disciplinary approach is crucial in hydropower project development.

An ESIA sets out to determine whether the benefits outweigh the impact and if this is not the case, then a project should not proceed. Also, by identifying the impact on communities and the environment, the developer can plan a project in a manner that avoids or minimises impacts as far as possible or mitigates these impacts. In addition, not only must the environmental and social impacts be assessed, but also closely scrutinised by international investors before they decide to fund a project.

An area of a river that has a falling gradient is selected for a hydropower development. Water is impounded by building a dam or a weir. This water is diverted via an intake structure to the hydropower station to generate power and is then released downstream. The effect is that the natural flow pattern of the river is affected or altered. To mitigate the effect on the aquatic environment, an Environmental Water Requirement (EWR) study is done to inform the downstream water requirements.

Knight Piésold (KP) is currently involved in ESIAs for two major hydropower developments: the Lufubu project in Zambia and the Sombwe project in the Democratic Republic of Congo (DRC). Both projects are in remote Greenfields areas where there is currently no power supply.

Addressing critical power and social needs

The Lufubu hydropower project is located in northern Zambia on the Lufubu River. The project will entail the development of a cascade of three impoundments and power plants with an initial installed capacity of 163 MW. An ESIA was previously completed and approved by the regulator; however, KP has been appointed by the Lufubu Power Company to address international funding requirements and also to determine the EWR for the project. The EWR will determine the volume of water and flow regime required to sustain the ecosystem and downstream water users.

Kipay's Sombwe site

↑ The ESIAs seek to ensure that the hydropower projects benefit communities affected by the new installations

The Lufubu ESIA is challenging due to the remoteness of the site. The direct project area is uninhabited, but there are various communities residing downstream between the cascades and Lake Tanganyika. In this case there could be an impact on these communities' livelihoods because of the altered flow of the river. KP will use its local expertise in Zambia to conduct consultation with affected communities and update the resettlement requirements.

On account of the socio-economic circumstances in the region, the project may result in an influx of people seeking economic opportunities. This social influx has knock-on effects on the environment.

The Sombwe hydropower project is on the Lufira River in the Mitwaba territory of Haut-Katanga in DRC. Its developer, Kipay Investments, is a DRC-based company aiming to address the immense power deficit in the DRC.

The project involves the construction of a 90 m high roller compacted concrete arch gravity dam, intake structure, headrace tunnel and a powerhouse approximately 3 km downstream of the dam. Sombwe will generate 150 MW of power that will be supplied to the substation at the town of Fungurume via a 220 kV powerline.

As with Lufubu, the Sombwe site is located in a remote area in the DRC with very limited access, especially in the wet season. KP aims to ensure that the aquatic and terrestrial biodiversity components are adequately addressed. Also, Kipay investments aims to use the project to facilitate upliftment of the local community and therefore KP will prioritise social studies and consultation.

Currently, due to COVID-19 restrictions, site visits cannot be undertaken but KP is working towards getting other parts of the ESIAs completed and will mobilise to site as soon as international travel restrictions are lifted.

Sustainability before profit

As both are Greenfields projects, there is a need to first understand the baseline environment; that is, what the environment and social sensitivities are. For example, an access road has a massive impact area because it opens up the area to deforestation and biodiversity degradation and it also has a significant social impact by altering livelihoods and traditional ways of life.

↑ Chika Falls, Lufubu River

On the other hand, these ESIAs also take into account that there are social benefits on both a regional and national level as there is a serious power deficit in these countries. For example, these new developments will also supply communities with power and help stimulate the economy through job creation. The social assessment takes into account the community's needs and identifies which development initiatives will benefit them most.

The ESIAs for both projects will ensure that the environmental and social safeguards are implemented. The focus will be on developing robust environmental and social management plans (ESMPs) to guide the construction and implementation phases of these projects to ensure sustainable, green energy.

Essentially, an ESMP is a rule book to guide the construction and operational phases. Examples of the guidance in the ESMP is the preservation of grave sites and trees. In the operation phase, the ESMP could guide a company about the volume of water that must be released to satisfy the ecological and social requirements downstream of the development.

At a time when there is an urgency to get economies going amid the COVID-19 pandemic, companies and governments may be swayed to pay less attention to the details of ESIAs. However, this is the wrong approach. Even in an economic crisis, it would be short-sighted not to look at the sustainability of a project as you cannot have short-term gains with long-term environmental and social impacts. MRA

About the author

Amelia Briel holds an M.Sc. in Zoology (Aquatic Toxicology) and is a registered professional natural scientist. She has 16 years' experience in environmental management within the mining and water infrastructure field. She specialises in large-scale infrastructure and mining projects.

Setting the benchmark

ICMM paves the way for responsible mining practice

The mining industry's reputation and its ability to operate now and into the future will undoubtedly be shaped by how it responds to the COVID-19 pandemic. The **International Council on Mining and Metals** (ICMM) and its 27 mining and metals member companies proactively use mining as a catalyst for change by improving the lives of people in mining host communities. Now, during this unprecedented global crisis, the ICMM and its members are supporting local response efforts, working with community members and organisations in often remote locations to identify and help meet specific needs, Dr **NICKY BLACK**, director of the Social and Economic Development Programme, tells **CHANTELLE KOTZE**.

Led by Black, the ICMM's social and economic development programme aims to strengthen social and economic development impacts including community engagement, human rights, and the broader benefits that mining can deliver. Black is working alongside other members of the ICMM team to support company members as they respond to the COVID-19 crisis.

In so doing, the ICMM has regularly convened its company and association members virtually to share resources and information to help the industry navigate the most effective support possible. This response has been focused around two main themes:

1) How companies are managing an emergency response to the health risks posed to their employees and communities, and providing immediate assistance to local communities impacted by the virus.
2) The groundwork required for longer-term economic recovery in communities and to build resilience in host communities to be better prepared to respond to the COVID-19 pandemic and future crisis situations.

> "The ICMM's Mining Principles, used as a benchmark for responsible mining by our member companies, are available for use by the whole industry,"
>
> **DR NICKY BLACK**

While many ICMM member companies have made much-needed donations toward the fight against COVID-19, Black highlights another key way in which mining companies have assisted. They have also leveraged their knowledge and understanding of their host communities, their trust in and strong rapport with these communities, as well as their thoughtful and respectful engagement within these communities to understand priorities and determine how best to deliver support.

"Previous investment in engagement, listening, and responding to community needs is providing invaluable for mining companies in this time of crisis, allowing them to engage and deliver impactful support to communities," says Black.

Setting the responsible mining benchmark

The ICMM's response to the pandemic has been informed by its Mining Principles –ICMM's membership requirement – which defines the good practice environmental, social and governance requirements of member companies. These in turn will support progress towards the

Image: 123rf.com

The ICMM's social and economic development programme aims to strengthen social and economic development impacts including community engagement, human rights, and the broader benefits that mining can deliver

↑ **The five key ICMM Mining Principles that guide responsible mining**

global targets within the United Nations' Sustainable Development Goals (SDGs).

The ICMM released a revised, tougher set of Mining Principles earlier this year amid increasing global pressure on mining companies to mine responsibly and rising stakeholder expectations around environmental, social and governance (ESG) best practice.

According to Black, the Mining Principles should be used as a benchmark for responsible mining by member companies, as it seeks to maximise the industry's benefits to host communities, while minimising negative impacts to effectively manage issues of concern to society.

There are 10 Mining Principles, supported by 38 performance expectations which set out clear requirements on issues including biodiversity, gender, human rights due diligence, labour rights, local content, mine closure, pollution, resettlement and waste, to name a few. They apply to more than 650 of the ICMM members' assets in over 50 countries.

Within the context of Black's Social and Economic Development Programme, there are five key Mining Principles that guide responsible mining, namely:

- **Mining Principle 1**: *Ethical Business*
  Apply ethical business practices and sound systems of corporate governance and transparency to support sustainable development.
- **Mining Principle 3:** *Human Rights*
  Respect human rights and the interests, cultures, customs and values of employees and communities affected by our activities.
- **Mining Principle 4:** *Risk Management*
  Implement effective risk-management strategies and systems based on sound science, and which account for stakeholder perceptions of risk.
- **Mining Principle 9:** *Social performance*
  Pursue continual improvement in social performance and contribute to the social, economic and institutional development of host countries and communities.
- **Mining Principle 10:** *Stakeholder Engagement*
  Proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner, effectively report and independently verify progress and performance.

These Mining Principles build on the values of members and also define good practice ESG governance requirements by member companies.

Moreover, the ICMM's work as an organisation, as well as its Mining Principles, are aligned to and support progress towards the global targets of the United Nations' Sustainable Development Goals. These aim to guide global development and address some of the most pressing global challenges to achieve a better and more sustainable future for all.

"The SDGs have created a common framework for us to align our organisation and our work programmes with – to effectively progress the mining industry's contribution to sustainable development," says Black. MRA

DID YOU KNOW?
The Mining Principles apply to more than 650 of the ICMM members' assets in over 50 countries

GOOD PRACTICE GUIDE ON EFFECTIVELY MANAGING COMMUNITY GRIEVANCE

A key focus of the ICMM is the development of tools and guidance for the mining industry to help meet the commitments that it has set out to achieve.

One such guidance that the ICMM recently issued, titled 'Handling and Resolving Local-Level Concerns and Grievances: Human rights in the mining and metals sector', is an updated guide to help members with handling and resolving community concerns and grievance. Updated to be in line with the United Nations' Guiding Principles on Business and Human Rights (UNGPs), the latest guidance integrates the eight UNGPs' effectiveness criteria and leading good practice.

Guidance is provided on the ways in which companies can develop robust, credible and trusted mechanisms that give local communities a way to raise grievances. It also provides frameworks for dealing with grievances fairly in the eyes of both the community and the company.

Other social guidance resources include a stakeholder research toolkit and community development toolkit, as well as a good practice guide on indigenous peoples and mining. These help mining companies seek and secure a social licence to operate – the non-regulatory permission that allows mining companies to continue to operate.

Social responsibility & iSAPP

By Lonkie Roelofsz, CEO of LWTR Consulting and Director of HNL Applications

Social responsibility is a core component of any mining company operating in the 21st century. The challenge of most mining companies is to collate and integrate the many components that encompass the effective management of their social responsibility. It's not a matter of not knowing what and how to manage this responsibility, but rather to have the ability to "fine-tune" efforts to maximise efficacy for all stakeholders.

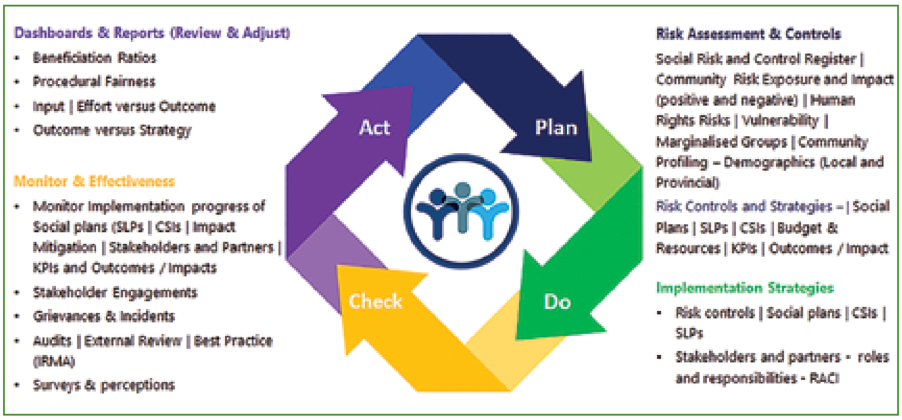
What is iSAPP

iSAPP is an electronic software application that integrates all the various aspects and components required to effectively manage one's social responsibility. A management system to enable executives and managers tasked for responsible stakeholder partnership mining, to have a quick and real-time social performance overview for the day to day management, and strategic social direction.

A real-time risk register (all stakeholders) is at the core of iSAPP and is surrounded by several other modules to ensure risk gauges are current. These modules, to enable an integrated system, are:

- Stakeholder engagements;
- Community profiling and demographics;
- Cultural heritage;
- Vulnerability and marginalised groups and individuals;
- Risk Controls (social plans / SLPs / CSIs / other) with KPIs and clear intended outcomes;
- Incidents and grievances;
- Monitoring and audits;
- International best practice review elements;
- General dashboards;
- Management dashboards and reports;
- Action Manager (track, notification, and escalation).

iSAPP is deployed at one of the largest opencast platinum producers in the world based in the Limpopo Province in South Africa, surrounded by some 50 communities within a 50 km radius, with several of these being doorstep communities.



iSAPP – ISO

iSAPP ensures alignment to the overarching principle of the PDCA model: Plan–Do–Check–Act as embedded in international standards. The iSAPP modules are structured to enable the integration between the PDCA components to give you the edge in terms of compliance to similar international standards and best practice.

Why iSAPP

- Social performance at your fingertips;
- Specifically designed dashboards for quarterly social performance review – information well-structured to keep the process focused;
- You don't have to run around at quarter and year-end to collate data from different sheets, power-point slides, departments, and systems as it is a one-stop-shop;
- Proactively identify social plans (risk controls) that are performing outside their intended scope and close gaps timeously;
- Roles and responsibilities clearly defined (KPIs) – RACI;
- Critical control monitoring;
- Real-time view on beneficiation and fairness;
- Social investment budget recon per, community / region / investment category / vulnerability / marginalisation / impact / social plan category;
- Suitable for small and large enterprises; and
- Roadmap to certification and measure against international best practice (ISO & IRMA). MRA

The role of ESG

Ensuring sustainable mining operations, communities and developments in Africa

By Adam Gunn, director and COO of GCS Water & Environment

It is generally accepted that environmental, social and governance (ESG) factors play an important role in the allocation of capital and investment decisions of socially responsible companies. It is also accepted that these factors cover a very wide range of issues from the pure environmental side such as climate change, environmental impact and water use, to social issues such as diversity, human rights and consumer protection and governance issues such as employee relations, and executive and employee compensation.

In the mining project cycle, ESG factors must be considered at an early stage of development. Mining projects must obtain authorisation from government authorities (the project's licence to mine or mining right) and in so doing undertaking the ubiquitous Environmental Impact Assessment (EIA) is required.

This compels a company to consider all relevant environmental impacts and often certain social aspects must be considered too. The EIA process will consider impacts, quantify such impacts and recommend mitigatory measures that must be undertaken in order to minimise such impacts. This is commonly known as the mine's environmental management programme or plan (EMP).

The EMP will contain binding commitments that must be made over the life of mine so that the mine's impact is minimised and mining operations are conducted in a sustainable manner.

In some mining jurisdictions, the mining right is composed of a bundle of obligations which the mining company must adhere to. The mine plan, the EMP, the Social and Labour plan, and the closure plan. The aim of this multi-faceted mining right is to ensure that in planning the mining operation, adequate resources are allocated to meeting the mining company's responsibilities. By adhering to these commitments the mining company ensures that the benefits of a project are more evenly distributed and in this way goes some way to ensure its social right to mine.

This is no mean feat. Anyone who has been involved in a grassroots mining project in Africa will know some of the massive challenges faced by mining companies and this is exacerbated in countries with underdeveloped infrastructure.

The project start-up costs can be huge as the mining company must build infrastructure as it develops the project. But it is here that a mining company can make a massive difference. Building of roads, bridges, water infrastructure and even new towns and communities can have a huge regional impact.

In early 2020 and before the Coronavirus became a global pandemic, mining companies were predicting that global trade tensions (and possible slowdown in demand) and ESG would be the two biggest challenges facing the mining industry in 2020.

However, since then, as the pandemic has massively interrupted global demand and supply chains, the playing field now looks significantly different from what it did a few months ago and survival will be the name of the game for many mining companies, especially the small cap or mid-tier miners.

ESG will play an important role and research shows that companies that had factored ESG into their decision making are better poised to survive. Those that have a higher level of ESG compliance are able to attract funds from large funding institutions that incorporate ESG into their funding criteria.

Sustainability and other environmental factors will already be part of these institutions' business models. Governance of these ESG entities should be strong as this will provide the leadership and structures to ensure a sustainable and balanced business that stands to face the future. MRA

About the author

Adam Gunn's role is specifically in charge of the environmental section at GCS, which deals with a wide range of environmental issues ranging from permitting and compliance issues to sustainability and mine closure.

Survival of the fittest

DRC mining in a post-COVID-19 world

While some mining operations in the DRC have been able to continue production despite COVID-19 lockdown restrictions, the country's mining industry faces a tough post-pandemic period, although this also provides opportunities for investors.

This is the view of several DRC mining industry pioneers who shared valuable insights and reports from mines on the ground during a webinar titled *Post-COVID-19: A brave new world for the DRC*. Hosted by *Mining Review Africa* and *DRC Mining Week*, the panel of experts comprised Boris Kamstra, director: Pangea Exploration and Alphamin Resources; Louison Kiyombo, partner: tax and legal, KPMG DRC; Amedeo Anniciello, CEO: Standard Bank DRC; and Louis Watum, MD: DRC Operations, Ivanhoe Mines DRC and president of DRC Chamber of Mines.

According to Watum, the entire mining industry in the DRC has shown unprecedented solidarity to government and local communities during the pandemic. "We see mining operators coming together and contributing in all sorts of ways, including taking extraordinary measures to keep operations going under a strict lockdown configuration and protecting the health of their employees and not retrenching people."

Meanwhile, Kamstra also lauded the staff of the Alphamin Bisie tin mine in North Kivu that was still fully operational, although he admitted that the remote location was a benefit to the operation during the pandemic. "Being isolated does give us a degree of immunisation. We've got a team onsite – we were firm believers in their superhuman abilities before this event – and they have now proven how much they are actually able to keep it going."

However, Kiyombo cautioned that the country's mining sector, at 20% the largest contributing sector to the state coffers, was already hampered by the COVID-19 pandemic. "A decrease in exports means a decrease in tax collection. When mining companies are obliged to cut costs it may end in job losses."

Government must come to the party

While Anniciello agreed that exports have slowed down, he added that COVID-19 had not been the only factor to negatively impact the country's mining industry. "I think there have been a number of other issues that have also impacted on the mining industry. One of these was the new mining code last year and some of the mines have been trying to get to grips with what it means and how it will impact them."

Looking to when the pandemic has passed, Watum stated: "I think it is going to be the survival of the fittest post-COVID-19. And who is going to be the fittest? It is those that are well-funded, with deep pockets, with less debt and with very strong management. I therefore see an increase in M&A activities post-COVID-19, where the big players with a lot of cash and experience will be shopping around for opportunities that have lost a lot of value and have become affordable," he concluded. MRA

www.drcminingweek.com

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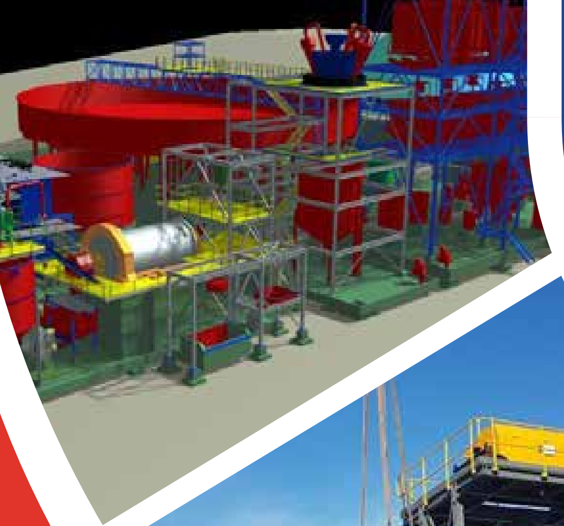

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