

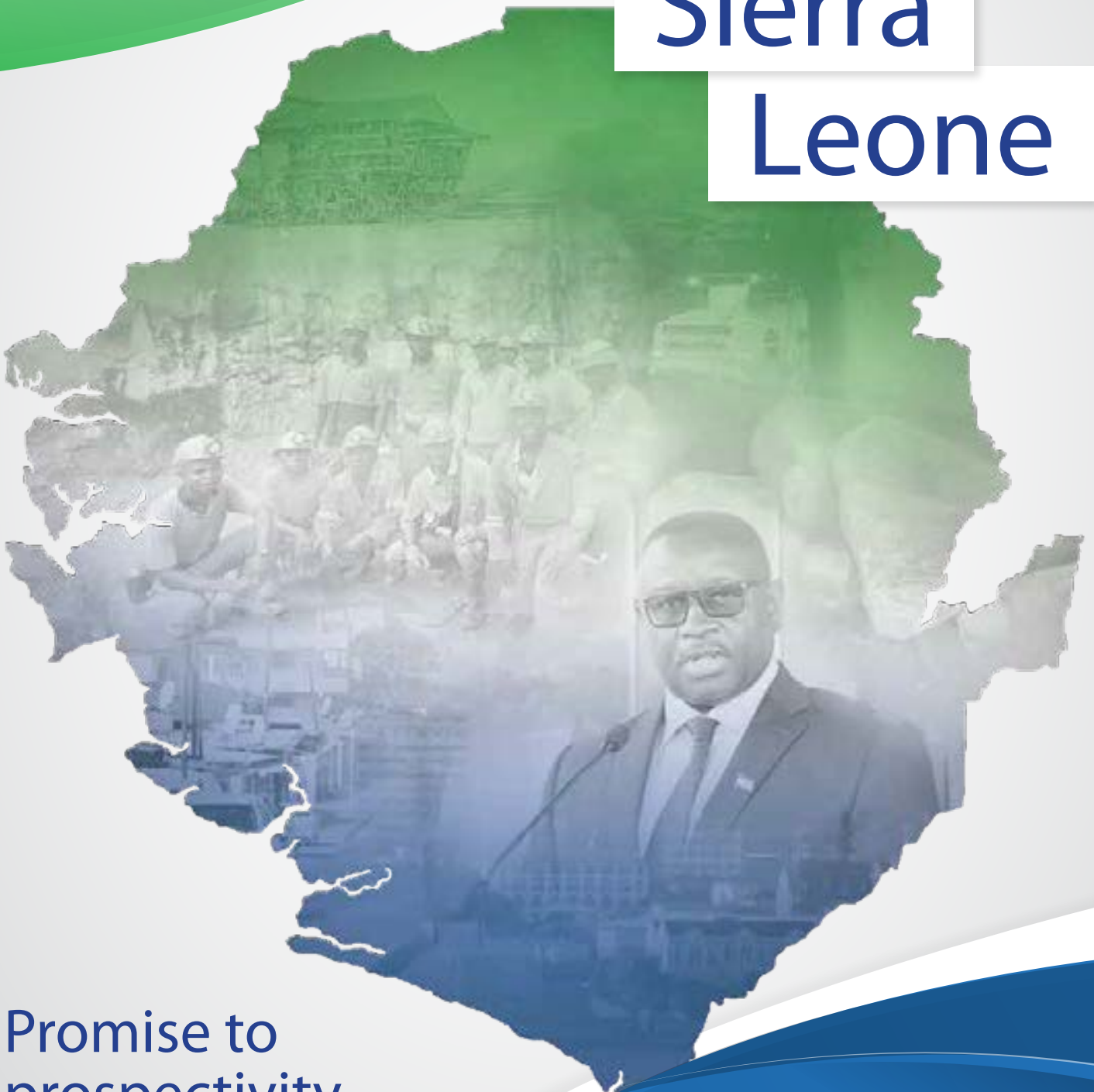
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September 2018
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Sierra Leone



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Storied past, future potential:
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Published by Aspermont Media, WeWork Aldgate Tower, 2 Leman Street, London, E1 8FA, UK.

Printed by Stephens & George Magazines, Merthyr Tydfil, UK. Registered as a newspaper at the Post Office.

Subscription records are maintained at Aspermont Media Ltd, 21 Southampton Row, London, WC1B 5HA

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 ISSN 0026-5225



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Supplement edited in London and Perth based on material supplied by JIC Media (www.jic-media.co.uk)
 Special thanks to Sahr Wonday, Victoria Nicol, Prince Cuffey; Dr Kelvin Anderson, Val Collier, Alie Toronka

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Message from the President

His Excellency President Brigadier (Rtd) Julius Maada Bio welcomes investors to the country

On behalf of my Government and the people of Sierra Leone, I am pleased to inform the international mining community that Sierra Leone is ready for business.

The minerals sector remains critically important to our country, contributing between 20-25% of GDP. Our country is richly endowed with mineral resources such as iron ore, gold, diamond, bauxite, rutile, ilmenite, zircon, chromite and columbite – tantalite (coltan). The presence of these deposits represents major opportunities for potential investors and the country to derive optimal benefits from the extracting, processing and exporting of these minerals.

To realise these opportunities, my Government has committed itself to create the right environment to convince investors to take that great leap to invest in a sector

that is under siege and in a continent renowned for its unpredictability. An environment where international investors can be confident that they will have the support of Government to navigate the pitfalls and take advantage of opportunities for creativity and innovation.

“We have shifted our thinking towards looking at all policy initiatives with a dual lens”

We are reviewing our mining policies and laws to establish a comprehensive governance framework for the mining sector to ensure a win-win situation for the government, mining companies and local communities. This framework will position our institutions, the laws, the regulations, the fiscal regime and practices governing the operations of the mining sector to guarantee good returns on investments and benefits to our people.

Our tax regime is internationally competitive to ensure fair return on investment and



guarantee meaningful revenue for government. We recently enacted the Extractive Industries Revenue Act, 2018 to consolidate the fiscal requirements of our investors and ease the burden of keeping up with financial obligations.

These reforms will address the many governance challenges of the past, and create a favourable, stable and predictable investment climate. By clearly defining procedures and streamlining processes, we shall reduce the risks associated with wide discretionary powers and corruption.

We are essentially reducing the regulatory and political risk uncertainties long associated with African mining investments. We have shifted our thinking towards looking at all policy initiatives with a dual lens: seeing it from both the perspective of the Government and the perspective of the investor.

We have also taken steps to improve energy access and develop our infrastructure. We are building and expanding our bridges and road networks; and continue to improve on electricity, water supply and communication systems.

I take this opportunity to extend an open invitation to Investors to come to Sierra Leone and get the unique experience of doing business in a friendly and stress-free environment. ■



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Sierra Leone's new direction

Minister of Mines and Mineral Resources, Dr Morie Manyeh, welcomes investors

I am pleased to use the medium to inform a global audience that a wind of change is blowing across Sierra Leone, and it is blowing the country and its people towards a New Direction: The Right Direction.

Under this New Direction, we intend to pursue policies and programmes aimed at making Sierra Leone an even more attractive destination for mining investment.

We are committed to transforming the minerals sector to guarantee good returns on investment, while at the same time ensuring that our people derive maximum benefits from our mineral wealth.

Sierra Leone has a long history of mining, starting with diamond mining in the 1930s and gold mining before that. Exploration results have revealed several mineral deposits around the country, including gold, bauxite and rutile.

While production of bauxite, rutile, diamonds, and gold continues, several important exploration projects point to the wider prospectivity of the country.

We are world renowned for the quality

and quantity of our diamonds. We have more than 20,000sq.km of diamond fields in the eastern, southern and northern regions of the country.

The largest diamond found in Sierra Leone was a 970-carat diamond dubbed the 'Star of Sierra Leone', and this is, to date, the third-largest diamond ever found.

Four of the 20-largest diamonds in the world are from Sierra Leone. Just under a year ago, a local artisanal miner found a 709-carat diamond in Eastern Sierra Leone, which now stands as the 13th largest diamond in the world. Sierra Leone exported more than 4 million carats of diamonds between 2010 and 2017.

We currently have large-scale mining operations for iron ore, rutile and bauxite across the country, producing millions of tonnes of these minerals annually.

The above, coupled with results from ongoing exploration work, indicates that Sierra Leone is richly endowed with minerals deposits, which offer significant opportunities for high returns on investment, and we welcome investors to explore these opportunities.

Plans are well advanced to conduct a countrywide geophysical survey, which will be followed by geological field mapping, to enable us to provide credible and reliable data to investors as a way of promoting investment in the minerals sector.

We are aware that it takes more than the abundance of minerals in a particular country to attract investors, and that investors require sufficient guarantees of a business friendly environment characterised by predictable laws, fiscal stability, transparency, security of tenure, etc.

That is why, under the New Direction, we have committed ourselves to key reforms, which include revising our minerals policies and laws, promoting transparency and guaranteeing security for our investors.

Our country recently conducted peaceful, free and fair elections in which my party, the Sierra Leone Peoples Party, successfully wrested power from then incumbent All Peoples Congress.

The peaceful nature of the election, and the smooth transfer of power, the second in 10 years, is in itself evidence that we have consolidated peace and democracy in Sierra Leone.

In the year 2000, we made history as the first country to adopt the Kimberley Process Certification Scheme (KPCS) to regulate the trade in diamonds.

The KPCS, which aims to eliminate smuggling and the trade in conflict



diamonds, stipulates that all diamonds in the international market must be accompanied by an authentic KP Certificate from a KP member state, and Sierra Leone has been a fully compliant country ever since.

We are a fully compliant country under the Extractives Industry Transparency Initiative (EITI), and we maintain an online repository, which ensures transparency in the licences administration and management process.

Under the New Direction, we have committed ourselves to revising the Mines and Minerals Act to ensure that it delivers maximum benefits for our people, while guaranteeing profitable returns on investment, consistent with international best practices.

We shall also pursue policies aimed at value additions to our mineral resources with a view to generating jobs and additional income to Sierra Leoneans, and we are open to discussions with investors in this regard.

Let me therefore take this opportunity to assure you that Sierra Leone is undoubtedly the new destination for investment in the mining sector on the continent.

With a Government committed to creating a friendly business environment characterised by a fair and competitive tax regime; emerging human expertise tailored to provide high quality service and management regimes that meets international best practices, improved and multi-purpose and multi-user infrastructure, we welcome you all to get the unique experience of business development and expansion in Sierra Leone under the New Direction. ■

Sierra Leone – at a glance



Population: 7,100,000 (July 2017 est)

Population growth: 2.38%

Ethnic groups: Temne 35.5%, Mende 33.2%, Limba 6.4%, Kono 4.4%, Fullah 3.4%, Loko 2.9%, Koranko 2.8%, Sherbro 2.6%, Mandingo 2.4%, Creole 1.2%, other 5.2%

Languages: English, Mende, Temne, Krio

Religion: Muslim 78.6%, Christian 20.8%, other 0.3%, unspecified 0.2%

Government: Presidential republic

Capital: Freetown

Legal system: English Common Law and Customary Law

GDP: US\$11.5 billion (2017 est)

Exports: US\$836.8 million (2017 est)

Imports: US\$1.564 billion (2017 est)

Currency: Leone

Rethinking resource governance

National Minerals Agency Director General talks about new era for Sierra Leone minerals sector

Notwithstanding its relatively small size, Sierra Leone is widely recognised as a highly prospective target for mining activities.

"Our country is richly endowed with mineral resources such as chromite, iron ore, platinum, gold, diamond, bauxite, rutile, ilmenite, zircon, base metals and rare earth elements such as columbite – tantalite (coltan)," says Sahr Wonday, Director General of Sierra Leone's National Minerals Agency.

"Our key priority is to enhance knowledge of the full range of minerals in Sierra Leone. In this regard, we are providing support for the Extractive Industry Technical Assistance Project, the main component of which is the airborne geophysical survey to enhance general knowledge of Sierra Leone's mineral potential.

"This will accelerate development of the minerals sector. Planning is well underway with implementation planned for the last quarter of this year."

Wonday says Sierra Leone's mineral deposits "represent major opportunities for both potential investors and the country to derive significant benefits".

The country's mining sector has been the backbone of its economy since mining started in the 1930s. In recent years, and prior to the steep decline in the iron ore price, mining revenue as a percentage of National Revenue Authority revenue was around the 20% mark. Mining sector output as a percentage of gross domestic product also exceeded 20%.

In 2017, the four operating large-scale mining companies – Tonkolili Iron Ore, Sierra Rutile, Sierra Minerals, and Koidu – paid a total of US\$52 million to the NRA and other government agencies and employed more than 6,000 people.

"Notwithstanding this significant contribution to the economy, our New Direction Government recognises the fact that Sierra Leone needs to show more for our mineral wealth. We must reverse the resource curse and ensure that Sierra Leoneans derive maximum benefit from our mineral wealth," Wonday says.

"The mining sector should play a critical role in supporting our development agenda and to this end we are committed to supporting the creation of an enabling environment for mineral sector investment for the benefit of our people.

"A key priority is to ensure that our licence-management process is very transparent with allocation of mineral rights based on strict eligibility criteria designed towards attracting only credible investors with proven track records.



Sahr Wonday: "Good governance of the mining sector is critical for Sierra Leone to attract the right kind of investment and fully maximise the potential benefits of its mineral endowments"

"Limitations and inconsistencies in the application of legislative provisions, perceived lack of security of tenure and transparency issues have in the past militated against major players becoming interested in investing in the country. Our New Direction Government will change this."

Wonday says Sierra Leone should learn from countries such as Botswana, Australia and Canada.

These countries have taken steps to promote good governance of the mining sector and integrate it into local value chains. While, Botswana ensured the establishment of a diamond polishing industry in the early days of its diamond boom, Canada and Australia established mineral processing industries. Coupled with clear legislation, good policies, a stringent legal and institutional framework, and effective regulation to improve good governance, the countries have since derived significant values from their mining industries.

"Good governance of the mining sector is critical for Sierra Leone to attract the right kind of investment and fully maximise the potential benefits of its mineral endowments," Wonday says.

"We will therefore establish a strong and robust governance framework for the mining sector that balances the financial benefits produced for government and the private sector with the protection of communities and the environment.

"We will put in place the legal, regulatory and institutional capacity for the effective management of the sector."

Wonday says this will include:

- Revision of the key legislation pertaining to the mining sector, such as the Mines & Minerals Act in 2009, which legislates for the protection of communities, corporate social responsibility, improved licence management with the Cadastre office, among other things.
- Ensuring transparency in the sector by upgrading geo-data information management system, which aims to manage geological information by developing a geological database, building a network infrastructure and a website portal where pertinent information about the extractive industry in Sierra Leone can be easily accessed. This will include tax and other contributions from the mining sector. Compliance with the Extractive Industry Transparency Initiative will also be a high priority.
- Address conflicting mandates of MDAs and ensure effective co-ordination.

"We will implement an internationally competitive tax regime that is mutually advantageous for both investors and our government. This will provide fair and accommodating taxes, thus ensuring a win-win situation, whereby mining contributes to the sustainable development of our country and its people, as well as ensuring good returns for investors," Wonday says.

"We will support investors by developing clear and accessible guidelines for investment.

In this vein, parliament has enacted an Extractive Industries Revenue Act to consoli-

date the fiscal requirements of our investors. All existing Mining Lease Agreements will also be reviewed to address the current situation where concessionary tax regimes have not benefited the country.

"A mining company should not be an 'enclave operation', with minimal backward or forward economic linkages required to stimulate economic activities in other sectors of the economy. We will give high priority to strict enforcement of our local content policy and ensure that mining companies train local staff and increase use of local contractors.

"Linkages between the mining sector and the rest of the economy, through infrastructural development, local content and downstream processes are crucial for diversi-

fication and broad-based development.

"Furthermore, we will align our national mining policies with regional and continental plans such as the African Mining Vision and adhere to international best practice as outlined in the Natural Resource Charter.

"We will continue to upgrade and maintain our infrastructure, in partnership with the private sector, to attract future investment in the country."

Wondray says community development is also a centrepiece of Sierra Leone's New Direction for minerals.

"We will ensure that our investor partners recognise that they have a responsibility to their host communities," he says.

"In line with this, our Community Develop-

ment Agreement model will form the blueprint for community arrangements between mining corporations and communities going forward. Mining companies will contribute at least 1% of their gross revenue to a community development fund.

"This will provide funding for education, health, and general development of mining communities. We must learn from recent experience in our iron ore sector and plan for a time when revenue streams from the mining sector decline.

"We will therefore pay close attention to compliance with the Public Financial Management Act and application of the fiscal rule to manage the use of mineral resource revenues." ■

EXPLORATION

Country-wide survey to start in October

Geophysics data to provide vital new insights into Sierra Leone's geological terranes

A comprehensive nationwide airborne geophysical survey of Sierra Leone is to start in October this year after the Government of Sierra Leone received international funding support for the programme.

The government under the Extractive Industries Technical Assistance Project 2 (EITAP 2), a World Bank funded project, has secured funds for a countrywide airborne geophysical survey. This survey will add new knowledge to and significantly improve the understanding of the country's geology and mineral occurrences.

Sierra Leone's mineral sector is considered to be of immense untapped potential and this survey will aid geological and structural mapping, as well as directly detect some mineral deposits.

The latest national geological map was compiled in 2004 by the Council for Geosciences for the Geological Survey of Sierra Leone (GSSL). Existing data based on geological mapping of parts of the country by the GSSL and the British Geological Survey between the 1950s and 1970s was used, but no ground-truthing was done. Some areas have never been mapped, meaning there are varying levels of detail in the current map.

Knowledge about the geology of the country is therefore limited with very little modern data available. Priority areas for geological mapping will be selected based on the interpretation of the airborne survey.

Survey specifications

GeoFocus (Pty) South Africa was contracted to chart and prepare the groundwork and design for a successful survey.

It held consultations with the National Minerals Agency (NMA) and did a detailed GIS study of available geological data including previous airborne surveys conducted by companies. Field work was done to collect mag-



Airborne geophysics data has played a vital part in stimulating mineral exploration in countries around the world

netic susceptibility, topographic and depth-of-weathering data and to hold consultations with mining and exploration companies.

The study concluded that detailed aeromagnetic/radiometric survey is justified with selected blocks in the gold and diamond mining areas flown using electromagnetics. The survey will be flown at low altitude, preferably 50m or less above ground depending on safety considerations. The flight line spacing for the aeromagnetic/radiometric survey is 150m, while that for the electromagnetics is 200m.

The surveys will be flown at 45° to the west of longitude 12° W, and at 315° to the east of longitude 12° W. These line directions were selected so that they cut across the strike of the

known geology. The surveys will be flown within the six months' dry season from November 2018 to April or May 2019.

The GoSL has called for bids for contractor services for the aeromagnetic/radiometric survey, the electromagnetics survey and for the supervision and provision of quality control for the integrated surveys.

Geodata management policy

The valuable geological data/information produced will increase investor interest not only in the mining sector but also in other sectors such as agriculture, rural planning and water resources. EITAP 2 has plans to strengthen the country's Geodata Information Management System so that the NMA will be able to provide "basic and reliable geological information to facilitate the promotion of private investments in the mining sector, identify areas that may be reserved and to support the planning of the socio-economic development of the country".

A data management policy that would provide guidelines for the collection, storage, use and dissemination of the country's geodata, including the airborne geophysical data, is being prepared and would require approval from the government, including the legislative branch.

The six-month national geophysical survey adds to efforts to create greater awareness of Sierra Leone's mineral endowment, and stimulate investment in greenfields exploration activity, and caps a period of significant adjustment of the country's mineral-sector governance.

The Sierra Leone government has, in the past five years, supported the closure of gaps in the legal/regulatory framework, established the National Minerals Agency (NMA) and strengthened the institutions responsible for the management of the mineral sector. ■

Storied past, future potential for Sierra Rutile

World's largest natural rutile deposit supports long-term production plan

SIERRA RUTILE, A WHOLLY owned subsidiary of Iluka Resources, is a leading mineral sands company, operating world-class assets in Sierra Leone.

The company produces high-quality rutile and ilmenite from the world's largest natural rutile deposit, located in the Bonthe and Moyamba districts of Southern Province.

With an operating history spanning more than 50 years, Sierra Rutile is one of Sierra Leone's oldest and most storied resources companies, enjoying a strong affinity with the country and its people.

The company has undergone several evolutions since its inception in 1967, and the most recent of these was its merger with Iluka in December 2016.

Iluka is an international mineral sands company with over 60 years' experience and expertise in exploration, development, mining, processing, marketing and rehabilitation.

The company is listed on the Australian Securities Exchange and headquartered in Perth, Western Australia. With operations in Australia and Sierra Leone; projects in Australia, Sierra Leone and Sri Lanka; and a globally integrated marketing network, Iluka is the world's largest producer of zircon and rutile. The company is also a major producer of synthetic rutile, an upgraded form of ilmenite.

Sierra Rutile has a resource life of at least 20 years, with exploration activities that are ongoing. Key features of the current operation include three mines – Lanti Dredge, Lanti Dry and Gangama – a mineral separation plant and associated infrastructure.



Iluka is investing substantially in Sierra Rutile and plans to increase production from current levels of about 150,000 tonnes per annum to between 250,000 and 275,000 tonnes per annum over the coming years. Expansions at Lanti Dry and Gangama are already underway, with commissioning planned for 2019. A definitive feasibility study has begun for a new mine at Sembuhun, with final development subject to Board approval.

Sierra Rutile employs more than 2,000 people and its workforce is over 98% Sierra Leonean. As a major employer, the operation has a commitment to local content and procurement. It occupies an important role in Sierra Leone's national economy and the local economies of Bonthe and Moyamba in particular.

More than simply a source of employment, Sierra Rutile provides world-class mineral products to the

global marketplace, with end-use applications that are part of everyday life. From paint to aeroplanes; sunscreen to smartphones, Sierra Rutile's products are present in pigments, ceramics, titanium metal, catalytic converters, fuel cells, water purification and fibre optics, to name but a few.

As part of Iluka, sustainability at Sierra Rutile means integrating economic, environmental and social considerations into business practice; and ensuring safe and responsible conduct underpins everything the company does.

Group-level sustainability frameworks have been implemented at Sierra Rutile, with a focus on safety, environmental management and anti-bribery and corruption.

The operation emphasises land rehabilitation as an essential part of its operating model; and has adopted a 'back to basics' approach to safety, including personal accountability, understanding risks, incident and hazard reporting and the wearing of appropriate personal protective equipment. Once complete, the large capital upgrade of Sierra Rutile's infrastructure will also enhance worker safety.

Following extensive consultation, Sierra Rutile has recently put in place a Community Development Agreement and a Community Development Committee, which will govern how the benefits of the operation

Above: Iluka Resources is investing substantially in Sierra Rutile to lift production from about 150,000 tonnes per annum to more than 250,000tpa

Left to right: A stakeholder engagement meeting in Sembuhun; Sierra Rutile's Gangama processing plant



Q&A: Rob Hattingh

Rob Hattingh speaks with *Mining Journal*

Rob Hattingh is the CEO of Sierra Rutile. He has led the company since its merger with Iluka Resources in December 2016; and is also a member of Iluka's executive management team. Rob took some time to speak with *Mining Journal* and share some of his thoughts and experiences about what it is like to run one of Sierra Leone's biggest companies.

Mining Journal: What has struck you most in your first 18 months as Sierra Rutile Chief Executive?

Rob Hattingh: In merging with Sierra Rutile, Iluka took over a mature and well established business, with local expertise in mining and processing mineral sands.

I think what has struck me the most is the warmth and generosity of the Sierra Leonean people; the dedication of our workforce; and the pride of place Sierra Rutile holds among the local, and indeed, national community.

Some members of our team have family members that have worked here going back several generations. It is humbling to think of the resilience of the many thousands of Sierra Leoneans that have plied their craft in this community over the past 50 years to make the operation what it is today, sometimes under the most challenging of conditions.

I was joined by a small group that relocated to Sierra Leone from Australia following the merger. We have been welcomed enthusiastically and feel privileged to have become part of Sierra Rutile's history.

MJ: What are your priorities over the next two years?

RH: Our number one priority is to deliver on the substantial programme of capital investment and expansion we have in front of us. I am pleased with the improvements and enhancements to current operations that have occurred over the past year and half. The task now is to build on this momentum and expand production considerably, in line with our plans.

While I have no doubt that we will encounter challenges along the way, I have



Sierra Rutile-built footbridge linking the villages of Higima and Nyandehun in the Imperi Chiefdom

confidence that the local knowledge and experience of the Sierra Rutile workforce, combined with Iluka's technical expertise, will grow the operation to the benefit of all of its stakeholders.

MJ: Your previous experience includes leading Iluka's Sustainability Group, how do you approach sustainability at Sierra Rutile?

RH: I think it is important to note that Iluka's approach to sustainable development is applied by the company in all of the jurisdictions in which it operates. Since the merger with Sierra Rutile, we have implemented group-level frameworks with respect to safety, environmental management and corporate governance. These are essential elements of our business.

Sustainable investment in our local communities is also important and, to provide a recent example, we have constructed a 60m footbridge over the Lanti dredge pond to link the villages of Higima and Nyandehun in the Imperi Chiefdom. The bridge provides for the safe movement of people and motorbikes between the two villages and is a demonstration of Sierra Rutile's commitment to social performance outcomes that are mutually beneficial.

are shared with local communities. Sierra Rutile supports the Jackson and Devon Anderson (JADA) Technical Institute and the Ruby Rose Educational and Resource Centre, both important community hubs in close proximity to the operation.

The Sierra Rutile clinic is an important part of the company's social performance. The clinic is equipped to handle a wide range of health tests and collaborates with specialist phy-

sicians to provide routine screening of diseases to its workforce and their immediate dependents.

Sierra Rutile promotes the fundamentals of fitness for work and conducts a number of initiatives and talks to enhance health awareness among the workforce.

Sierra Rutile has a proud history in Sierra Leone and the company, along with all of its stakeholders, is looking forward to a bright future.



'I think what has struck me the most is the warmth and generosity of the Sierra Leonean people; the dedication of our workforce; and the pride of place Sierra Rutile holds among the local, and indeed, national community'

– ROB HATTINGH
CEO

SIERRA RUTILE AT A GLANCE



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SIERRA LEONE

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The stunning 709.41 carat Peace diamond was one of two huge special stones recovered in Sierra Leone in 2017



Diamond, gold exports dip in 2017

Plenty of upside for two key Sierra Leone commodity exports

Sierra Leone diamond exports dipped in volume and value in 2017. The Sierra Leone National Minerals Agency (NMA) reported a 22.51% fall in diamond exports for 2017 versus 2016, with total diamond exports for the latest year at 288,978.73 carats worth more than US\$123 million.

The average price per carat received during 2017 was US\$426.11.

A total of 179 Kimberley process certificates were issued to facilitate the exports.

The country's total 2017 diamond production haul included 166,594.57 carats of gem diamonds – 58% of the total – and 122,384.16 carats of industrial diamonds.



Artisanal production with a volume of 183,216.54 carats, valued at US\$79.08 million, accounted for 63.40% of the total exports. Kimberlite production of 105,762.19 carats, worth US\$44.05 million, contributed 36.6% of the export total.

The NMA said *mêlée* and industrial category diamonds accounted for 88% of total exports.

"Indications are that the run of mines (ROM) trend did shift a bit in the *mêlés* and industry categories, relative to the year 2016. There was a 17.37% carats drop in the *mêlés* category and a corresponding 18.12% increase in the industry category," the agency said.

"Although there was a drop in volume of 27.23% in the special stones category, its value was the highest across all categories.

"This can be attributed to the value attained by the two special stones – the 709.41ct Peace diamond owned by the government, and the 476.97ct Prosperity diamond owned by Meya Mining.

"With the fluctuations in the world market price for diamonds and the huge showing on the two special stones, Sierra Leone's

average price per carat for diamonds increased to a new high of US\$426.11, an increase of 47.24% [from the \$289.39/ct average the previous year].

"The general price per carat index steadily remained at above \$300 per carat but jumped to over and above \$500 in the last two quarters of the year under review due to the rise in diamond prices in the last six months of 2017."

The NMA said with recent investment by Koidu Ltd in expansion of its operations, "it is hoped that the coming years will see more than double the export figures of the previous years".

Gold

Sierra Leone gold exports for 2017 totalled 142.06kg, down 24.31% on the 2016 level. Gold exports last year were worth US\$5.2 million.

"In all, 16 exporters participated in 2017," the NMA said.

"Only 67 certificates were issued to expedite the exports."

An averaged of US\$1,140/oz was received for the 4,567.81 oz of gold exported in 2017. ■

LEGAL

Clamp down on illegal mining

New focus on comprehensive regulation of mining, environmental practices

The Ministry of Mines and Mineral Resources and the National Minerals Agency (NMA) have embarked on a clampdown on illegal mining activities across the country.

They say illegal mining is a deterrent to economic growth and development as it deprives the government of much needed revenue.

The illegal miners usually engage in environmentally harmful practices. In 2016, the Strategic Environmental Assessment report and a World Bank study estimated that illegal artisanal and small-scale operations employ between 100,000 and 400,000 miners.

The NMA is recruiting and training mines monitors and wardens in a bid to strengthen its provincial capacity to effectively patrol and monitor these remote mining areas. It is also putting provisions in place for improved working incentives for mines and customs officials.

Reduced illegal mining will lead to the growth of corporate mining activities, which will increase output and the government's revenue from the minerals sector. It will also ensure that mining activities are done in a responsible and sustainable manner.



LEGAL

Cancellation of mineral rights

The Ministry of Mines and Mineral Resources (MMMR) and the National Minerals Agency (NMA) have revoked 40 licences whose mineral rights holders have not been meeting their financial and other statutory obligations.

These licences are in some of the most prospective areas of the country and these mineral rights holders have failed to comply, despite repeated warnings.

This move is expected to attract new investors with the capacity to meet their obligations.

According to the Minister of the MMMR, Dr Morie Manyeh, most of the revoked licences were held by people who could not afford the required taxes and exploration costs and were only using the licences to entice investors.

He said licence holders should deserve them and have the capacity to operate them as this will increase government revenue and boost the country's foreign currency earnings.

GOVERNMENT

Review of the Mines and Minerals Act of 2009

The Government of Sierra Leone (GoSL) under the Extractive Industries Technical Assistance Project 2 (EITAP 2), a World Bank-funded project, has called for bids from consulting firms to review the Mines and Minerals Act (MMA) of 2009.

According to the GoSL, "the scope and reach of the MMA 2009 cannot accommodate new and emerging legislative reforms in other sectors that have direct and, in some respects, indirect bearing on the mining sector".

A revised MMA would consider public private partnership and promotion of local content to unleash the potential of the mining sector to create jobs, generate increased revenues, engender infrastructural development and support economic diversification.

Investors and other concerned parties have noted the MMA 2009 lacks clarity on some provisions including aspects of the relationships between the Ministry of Mines and Mineral Resources, the National Minerals



Agency, the Environmental Protection Agency and the National Protected Area Authority.

Some of the laws governing artisanal mining have also proved difficult to adhere to and a review would empower artisanal miners, which in turn would help reduce smuggling.

Sierra Leone diamonds are among the most valuable in the world. The country is working to diversify its mineral revenue base, and expand mining



Photo: National Minerals Agency

EXPLORATION

Promise to prospectivity

New initiatives set to shine a stronger light on Sierra Leone's mineral prospectivity

Sierra Leone's promise as a mining destination is unquestionable, but fortune has not been in the country's favour in recent years.

A landslide killed 1,000 people in the capital Freetown last year, Ebola struck in 2014 as the country was still only a decade removed from civil war, and when the bottom came out of the iron ore price,



NMA Director General Sahr Wonday: "We want to try to make sure that the investor gets a good return on the investment but also as a country we benefit from our mineral wealth"

two of the country's five operating mines at the time shut down.

But the country's mining industry will soon take a major step forward in the form of countrywide, reliable and accessible geophysical data. The airborne survey will kick off later this year and start delivering results in mid-2019, likely bringing more explorers and allowing current players in the country to make sure they're getting the most out of their land packages.

There are still relatively few public companies with a Sierra Leone project as their principal offering, but between ASX-listed Iluka Resources and explorers coming in, investors will have more and more options to get into the rising jurisdiction.

The new government of His Excellency President Brigadier (Rtd) Julius Maada Bio, who was elected in April, has made several positive steps already for prospective investors. In his first speech to parliament after taking office, President Bio was open about the challenges facing miners and his new government in Sierra Leone, outlining the hit to the country's growth rate (down from 6.3% in 2016 to 3.5% in 2017) when operations shut down.

President Bio has also been clear about his goals for rejuvenating investment in the sector.

"My government has committed itself to create the right environment to convince investors to take that great leap to invest in a sector that is already under siege and in a continent renowned for its unpredictability," he said.

"An environment where international investors can be confident that they will have the support of government to navigate the pitfalls and take advantage of opportunities for creativity and innovation."

The seriousness of this approach was shown by the cancellation of 40 exploration licences which the National Minerals Agency decided were not likely to be developed.

Those cancelled licences represent an immediate opportunity for serious investors, but there will also be significant amounts of geological data arriving next year for those willing to wait for the World Bank-backed airborne survey and mapping project.

The government says it will promote the new data around the world at mining conferences, confident in the survey's power to attract foreign explorers.

Sierra Leone has had to look on while neighbouring countries developed a name in the resources industry – Cote d'Ivoire has plenty of big players exploring; Liberia has overcome Ebola and now hosts a continually improving gold mine in New Liberty; and, Guinea is moving along with a bauxite mine and refinery, even as Simandou remains stalled.

Geology: what we know so far

The current insight into Sierra Leone's geology comes from broad-brush estimates, project-specific exploration, artisanal operations and historic surveys.

The British Geological Survey wrote a frank analysis of the situation after a visit earlier this year.

"Sierra Leone is a resource-rich country, with extensive known and potential mineral and petroleum resources," the BGS team wrote.

"However, knowledge about the geology of the country is limited, with very little modern data in the public domain, and this hinders sustainable development of these resources for the national good."

As Sierra Leone has long been a producer of gold, diamonds and iron ore, geologists are in the unusual position of being able to find promising orebodies by looking at where artisanal and some industrial miners are already exploiting deposits.

Geoscientist Dr Kelvin Anderson, a lecturer at the geology department of Fourah Bay College in Freetown, said the country's known kimberlite pipes are only in the east but there had to be more.

"Even though diamonds have been found in the north and south, we only know of diamondiferous kimberlites in the eastern side of the country," he said.

"When I was working for Stellar Diamonds, we did some exploration in the south ... and there was so much that was indicative of kimberlites, but no diamondiferous kimberlites. Kimberlite has been found down in the south, but it is not diamondiferous.

"[Artisanals] are mining diamonds down there, so there must be kimberlites that are not yet discovered."

Dr Anderson, who has consulted on the airborne survey, said there would also likely be extensions of the greenstone belt.

"We know that the gold is in the greenstone belt, but the greenstone belt has not been mapped in detail," he said.

"We have the main greenstone belt, but we know gold is also found in the north."

African Battery Metals (ABM, formerly Sula Iron & Gold) has found plenty of gold in the north.

Its most recent drill results from the Sanama Hill area of the Ferensola project in September 2017 delivered intercepts of 19.3

g/t Au over 1.2m and 8.6 g/t Au over 2m, as part of a 5,000m drilling programme.

ABM is looking for a joint-venture or farm-out partner for the project.

The director of Sierra Leone's Geological Survey, Prince Cuffey, said the airborne survey could also turn up new metals for the country.

"From historic data that we have, there is a copper anomaly somewhere in northern Sierra Leone," he said. "There is potential for nickel and cobalt [as well]."

The airborne magnetic and radiometric survey will cover the whole country at 150m line spacing and an EM survey (with 200m line spacing) will focus on the Sula-Kangari greenstone belts, the kimberlite zones, and the Nimini and Gori Hills greenstone belts.

This move has been helped along by the World Bank, which has put in US\$20 million in funding.

The mapping phase itself will also be incredibly

important for bringing more explorers into the country.

The BGS said it would be a big step up from the currently available data.

"Most work on natural resources in Sierra Leone depends upon the 1:250,000 national geological map of Sierra Leone," the BGS team wrote.

"This map is now often treated as being accurate, despite the fact that it has clear shortcomings."

Current operations

The assessments of the current geological knowledge might indicate there is very little going on in the Sierra Leone mining industry, but that's nowhere near the case.

National Minerals Agency data from 2017 shows 6.5 million tonnes of iron ore, 277,000 carats of diamonds, 1.8Mt of bauxite and 222,000t of ilmenite and rutile were produced in Sierra Leone.

Iron ore numbers have dived since Shandong Steel and Iron shut down its Tonkolili operations last year.

Diamond numbers should be up this year as the BSG Resources-owned Koidu is back in production after a move underground.

The Koidu head of technical services, Miles Van Eeden, said the project had reached throughput of 80,000 tonnes per month after 15 months of downtime during the transition.

The move to sub-level caving caused some consternation locally, but moving to a new mining method has prolonged the operation, which has been in production since the early 2000s.

"Going underground has been a learning curve for the company itself as well as for the country, because we had to embark on a

"My government has committed itself to create the right environment to convince investors to take that great leap"

Dr Kelvin FE Anderson



Dr Kelvin Anderson (pictured above) is a geoscientist with over 15 years' experience, having worked as a geologist and geophysicist in diverse operating environments in West and Central Africa, including Sierra Leone. He has led prospecting teams that have explored remote areas of this region for diamonds, gold and iron ore.

"We need investors in the gold industry to come and help with the artisanal workings"

Dr Anderson recently served as National Consultant for two countrywide projects in Sierra Leone, that is, for GeoFocus (Pty) South Africa, who were contracted to chart and prepare the groundwork and design for a successful airborne geophysical survey, and for the Environmental Protection Agency, where he was responsible for all geological and technical aspects of the Artisanal and Small-scale Gold Mining Overview.

He also has a university professional career, having worked as a lecturer in the Department of Geology, Fourah Bay College, University of Sierra Leone. He holds a master's degree in Geo-Information Science and Earth Observation, with specialisation in Applied Geophysics, from ITC, University of Twente, Holland, and a PhD in Earth Resources from Camborne School of Mines (CSM), University of Exeter, UK.

whole new environmental impact assessment and participation workshops," Van Eeden said.

The company's community work has long been a feature of the operation; during the Ebola crisis, Van Eeden and his colleagues were faced with the choice of staying or leaving and shutting the mine down.

"I think it was in our best interests in the company to stay open and operate normally," he said.



Sierra Leone's National Minerals Agency is working closely with the country's government on delivery of a fairer royalty system - part of a platform that shows the public the industry is providing public as well as corporate benefits

► “If [the mine] closed down the entire community would have fallen apart. “From a social community point of view as well, all factors considered, we decided to put systems in place so that it would be a going concern.”

The rewards are clear in the region.

The neighbouring Meya Mining operation sold a 476-carat rough stone to Laurence Graff for \$16.5 million at the end of 2017. It wasn't the first big diamond found in the area: the Star of Sierra Leone was also from nearby, and is the fourth-largest gem-quality stone ever found at 969ct.

Looking at the county's bulk mineral production, rutile has been a consistent performer, with Sierra Rutile now part of Iluka Resources.

Following this acquisition in 2016 Iluka has boosted its cash flow and reduced its debt considerably on the back of improved market conditions for mineral sands.



Sierra Rutile mineral sands dredging operations

At Sierra Rutile, the company is currently doubling the capacity of the Lanti and Gangama dry mines from 500-600t per hour to 1,000-1,200tph by 2019. This is part of a large expansion programme which will see safety and sustainability upgrades made at existing operations and also consider the Sembahun project, which is currently the subject of a definitive feasibility study.

Iron ore has had a trickier time in recent years; price weakness and demand for higher-grade ore led to Shandong shutting Tonkolili.

Nearby Marampa was also hit by the price fall resulting in the collapse of its owner. New licence and rights were issued and awarded to the former offtaker of the mine Gerald Metals, which plans to start producing again by the end of the year.

Craig Dean is head of Gerald and its subsidiary SL Mining. He said Marampa would come back into production at a good time. “By the end of the year, we should commission and put the mine back into production for 2Mtpa of high-grade concentrate with greater than 65% Fe content,” he said. “We're fortunate because the resource is quite good.”

Getting permission

The government of Sierra Leone made several bold moves this year in the mining sector.

The cancellation of the 40 licences, freezing mineral lease agreements (MLA)

handed out by the previous government, and closing the permitting process for new players are a few of the actions taken so far.

NMA Director General Sahr Wonday said these were necessary steps to get the industry back on track.

“What we're going to be looking at is trying to align [the MLAs] with international best practice,” he said.

“We want to look at how much of that cake is divided – how much goes to the shareholders, how much goes to the central government, how much goes to the local communities – because depending on how you tweak the permits, then it will shift one way or the other.

“We want to try to make sure that the investor gets a good return on the investment, but also as a country we benefit from our mineral wealth.”

Wonday, who worked for Sierra Rutile for more than 30 years, said communities in mining areas also needed to better understand the industry.

“How we strike that balance is going to be the challenge. Because the perception out here in Sierra Leone is that the public is not benefiting much from our mineral wealth and it's all going to the investors, and so on. That's the general public perception,” he said.

“I'm not saying that's necessarily the case, but we need to provide supportive evidence to show the country is actually getting a fair

share of the wealth that is created by this investment and then that will go a long way towards addressing those public concerns.”

On top of the MLA work, the government has already brought in a new extractive industry act, in line with getting mining companies onto a single, transparent tax arrangement.

Wondy said bulks would have a royalty rate of 3% under the act.

The legislation has set the rate for diamonds worth more than \$500,000 at 8% and those worth less will have a rate of 6.5%. Precious metals are listed with a royalty rate of 5%.

Navigating the new rules

SL Mining received its MLA at the end of the last year, and while all MLAs are being reviewed by the new government, Craig Dean said he has confidence to move forward with bringing the mine back into production and investing as much as \$300 million “as we have good government support and completed all formalities in accordance with applicable law”.

“Elections happened in March, there were some meetings we went through in April and May, and after we had the first official meetings, we got comfort right away and said let’s pull the trigger,” he said.

“Where we are now, I do feel we got very good support. The bottom line is if you get the mine up and running, it creates jobs.”

Marampa will likely be employing around 1,000 locals by the end of the year.

Dr Anderson from Fourah Bay College said the government crackdown on those sitting on licences was very positive.

“With those licences cancelled, this is the appropriate time to come in and look at what’s been cancelled,” he said.

Reflecting on the current industrial-scale operations in the country, Dr Anderson said production did not match the resource profile.

“It’s a bit weird we don’t have any gold mines in Sierra Leone,” he said.

“We need investors in the gold industry to come and help with the artisanal workings.”

New gold prospects should come as the airborne survey results roll in.

Craig said Gerald Metals would be watching keenly.

“It goes without saying that with the size of investment we’re putting in the country we would be highly interested in being able to work, explore and exploit more within Sierra Leone,” he said.

“I know [the government is] going through a campaign now and pulling permits, so I’d say they are trying to crack down and legitimise things a bit more, which is a good thing.”

Dr Anderson said one critical piece of work as the airborne survey got underway would be the geodata management system currently before cabinet.

“The data would grant immense power and knowledge to whoever is going to be in control of it,” he said.

“They should give people equal access ...

Sierra Leone’s potential for large gem-quality diamonds

Three large diamonds weighing 709.48 carat, 476.89 carat and 144.12 carat (figure below) were found in Kono District in 2017/18. The 709.48 carat ‘Peace diamond’, one of the top 20 largest diamonds ever found, and the 144.12 carat diamond, were recovered by artisanal miners. The 476.89 carat ‘Prosperity diamond’ is of exceptional quality (\$34,599 per carat, see table below) and was recovered by Meya Mining from bulk sampling kimberlite within its property, adjacent to the Koidu Mine. Diamonds produced in Sierra Leone last year ranked in the top 3 of the price/carats index according to the Kimberley Process Statistics, 2017. Some other large finds along with their price/carats are given in the table below.

Large diamond finds

Carat	969.80	770.00	709.48	532	476.89	283	249.25	188	144.12	125.80
Year	1972	1945	2017	1943	2017	1996	1943	1996	2018	2014
Price / Carat (\$)	2,578		9,162		34,599				4,579	6,502
<i>Table: Some large diamond finds including the Star of Sierra Leone (969.80 carat) and the Woyie River diamond (770 carat). The 476.89 carat was recovered from kimberlite and the others from alluvial deposits</i>										

Potential for the discovery of kimberlites

The 476.89 carat diamond is a testament to the potential of the country’s kimberlites for large gem-quality diamonds. There has been up to 2km of erosion of the land surface since most kimberlites intruded around 70-to-150 million years ago and this has resulted in extensive alluvial sources of diamonds that have been mined for over 70 years. The main kimberlite occurrences are in the East, ie, Kono District, and the Tongo area of Kenema District, south of Kono. Others are the barren kimberlites in Gorahun, Kenema District, and Lake Popei in the south. Alluvial occurrences are known in the north and south and kimberlitic indicator minerals (KIMs) have been recovered there meaning they may have their own kimberlite sources. For example, there are widespread KIMs around the Zimmi area in the south which is renowned for yellow diamonds and this points to a new as yet undiscovered kimberlite cluster. There are parts of the country that are relatively under explored and based on the spread of KIMs and alluvial diamond workings, there are likely to be new sources which remain to be discovered. The diamond potential of SL remains relatively untapped due to lack of exploration but this may be aided by the proposed countrywide airborne geophysical survey.



Figure: Three large diamonds recovered in 2017/2018

a system wherein some government official would not have access to the data and start doing deals with people, who come and take over the most prospective areas.”

Sierra Leone has previous experience in using policy to change the industry for the better. The Kimberley Process led to more diamonds being sold through official channels, according to Dr Anderson, who also studied artisanal mining intensively.

“Our investigation shows us that most of the gold is being smuggled into Guinea,” he said. “From the diamond side, it’s a completely different story thanks to the Kimberley Process.

“That has forced even the artisanal miners to bring their diamonds to the government for export.”

Anglo American subsidiary De Beers is also trying out a technology-backed solution called ‘GemFair’, which involves supplying artisanal miners with tablets and tamper-proof bags.

They log their finds through an app, and then the diamonds’ supply chain journey can be tracked all the way to the boutiques of London or Hong Kong.

Prospectivity to prosperity

There is still a long way to go for Sierra Leone’s mining industry.

But with the support of institutions such as the World Bank, Adam Smith International and the British Geological Survey, along with beefed up membership of the Extractive Industries Transparency Initiative, the country should be able to move quickly towards a mining sector based on large-scale, sustainable operations.

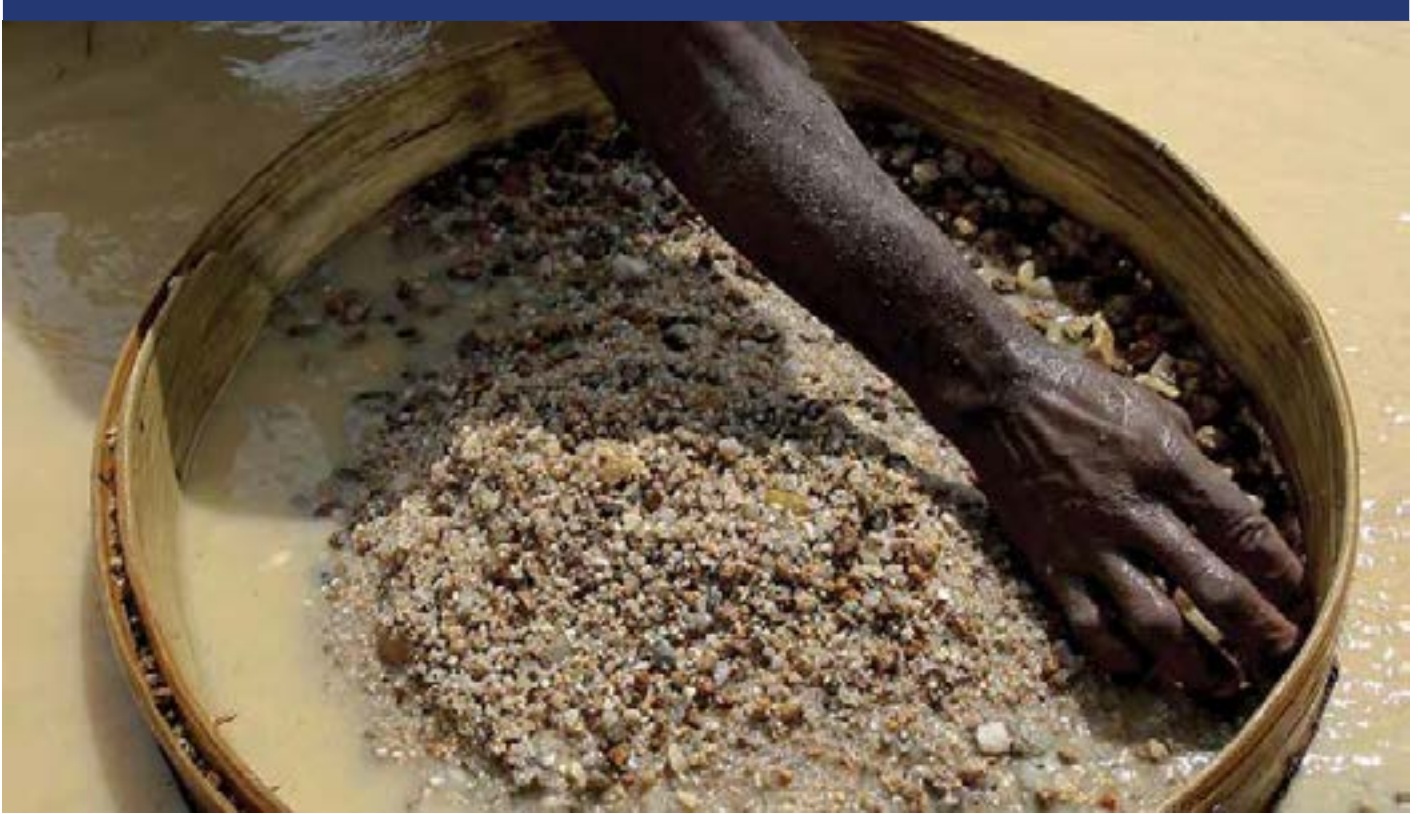
The skills base is there at the management level, with a strong geology tradition (seen in people like Dr Anderson and Prince Cuffey), and industry experience coupled with policy expertise (Wondy) working under a leader keen to change things, this is a positive time for the country.

Mining can bring major developmental changes to poverty-stricken countries if the right processes are in place, as shown in a recent International Council on Mining and Metals report.

It’s now up to the Sierra Leone government to follow through on its big ideas and allow miners to turn some of that mineral promise into prosperity. ■

Rules engender certainty around small-scale and artisanal mining

Government policies aimed at ensuring adequate regulation of key sector



A sweeping review of rules governing small-scale and artisanal mining in Sierra Leone has created a regulatory environment conducive to achieving the level of open competition, continuity and security of tenure that can maximise benefits of the activity to the nation.

Changes recently introduced were also designed to minimise smuggling of precious, industrial and sand-based minerals that previously plagued the sector.

According to Sierra Leone's Ministry of Mines and Mineral Resources, the livelihoods of more than half a million people in the country depend on small-scale and artisanal mining activity, which also generates revenue for government and an "appreciable amount of economic activity" beyond that directly connected to the minerals recovered.

Sierra Leone's strengthened and more transparent regulatory structure covers not only artisans and small-scale miners, but also the dealers and exporters of minerals produced.

The government had "decided to regulate the Small-Scale and Artisanal Mining sector in a manner that ensures open competition, continuity and security of tenure, and minimises smuggling of Precious, Industrial and Sand Based Minerals

so as to maximise benefits to the nation as a whole".

Regulations specify key requirements for artisanal miners as:

- Application for an Artisanal Mining Licence shall be submitted in the prescribed application form.
- An Applicant for an Artisanal Mining Licence shall be allocated available mining land (not encroaching on area of other Mineral Rights Holders) by the Chiefdom Mining Allocation Committee before it is processed and issued by the National Minerals Agency (NMA). Artisanal mining may be facilitated on areas of other Mineral Rights Holders with the permission of such Mineral Rights Holders who shall inform the NMA for its concurrence.
- An applicant for an Artisanal Mining Licence shall provide evidence that he possesses sufficient capital and mining experience to undertake mining in accordance with the Artisanal Mining Provisions prescribed in the Mines and Minerals Act 2009.
- An Artisanal Mining Licence shall be granted to (i) in the case of an individual only to a Citizen of Sierra Leone; and (ii) to a Co-operative registered in Sierra Leone under the Co-operatives Act Cap 253.
- All such co-operatives shall be registered with the National Minerals Agency for

approval to participate in Artisanal mining of precious, industrial, and sand-based minerals.

- In addition to the registration, a co-operative shall apply for an Artisanal Mining Licence and must fulfil the condition set forth for the application of the Prescribed Licence.
- Where an Artisanal Miner is to be sponsored by a Financier, such Financier shall show proof of his/her financial ability to undertake the mining venture and may be a Licensed Dealer or an Exporter. A Financier without a Dealer/Exporter's Licence shall not be allowed to handle any of the precious, industrial, and sand based minerals recovered from the mining operations but may facilitate the sale of such Precious, Industrial, and Sand Based Minerals to a Licensed Dealer or Exporter.
- All Financial Supporters of Artisanal Mining Licence Holders shall register with the NMA regional office, and shall pay a registration fee of Le 250,000 per acre.
- Heavy earth-mining machines such as Excavators, dredges, etc, shall not be employed in Artisanal Mining Licensed areas and shall target alluvial deposits only (and not Kimberlite deposits). Pit depth shall be limited to 10m.
- Mining shall be carried out in an environ-

mentally friendly manner. All such mining operations shall be closely monitored by the NMA to ensure best mining practices are employed by all.

- An Artisanal Mining Licence shall be valid for such period, not exceeding 1 year and may be renewed for further periods not exceeding one year at a time.
- Tenure and Renewals shall be subject to the holder's fulfilment of the conditions required by the Mining and Environmental Regulations in force.
- The area covered by an Artisanal Mining Licence shall not exceed 5 acres. The area must not encroach on any other Mineral Rights Holders area without their permission.
- An Artisanal Mining Licence holder shall pay a prescribed rehabilitation fee to a rehabilitation fund that will be utilised to defray the cost of rehabilitation and reclamation of mined out areas.
- An application for an Artisanal Mining Licence shall pay all other fees before the issue of his Licence.
- An Artisanal Mining Licence shall be revoked if, (i) within a period of three months no mining operations have commenced under the said Licence or its renewal; (ii) the Holder fails to fulfil the conditions required by the Artisanal Mining provisions of the Mines and Mineral Act; and (iii) the holder contravenes any provisions in the regulations and Policy.
- The holder of an Artisanal Mining Licence shall be required to sell his proceeds to a licensed Dealer or Exporter only and not to another licensed miner. All such transactions shall be recorded on a sales card and produced for inspection by the Director of Mines or an Authorised Officer.

Support for artisanal miners

The Ministry of Mines and Mineral Resources says the Sierra Leone Government also intends to re-activate an assistance scheme aimed at helping artisanal miners to "restore rights of complete control over mining operations within their mining claims and become less dependent on the supporters who had hitherto usurped the powers of the

miners due to the miners' inability to secure the high initial investment capital required".

"It is against this background that the Peace Diamond Alliance Project has been launched to encourage the formation of mining co-operatives that can be provided with mining equipment and machinery as well as food for work, required for the artisanal mining operation," the Ministry says.

"The project has been tried in Kono, and there are plans to extend to Tongo and other parts of the country."

The Peace Diamond Alliance Project has also started training artisanal miners in the Kono district in the art of valuing diamonds to enable them to negotiate the best market prices for their winnings when selling to dealers or exporters.

Requirements for small-scale mining

Under Sierra Leone's regulatory reforms, proposed small-scale mining companies must be a wholly-owned Sierra Leone Company registered in Sierra Leone under the Companies Act 2009, or a body-corporate incorporated in Sierra Leone with a minimum of 25% Sierra Leonean shareholding, preferably held by the Community in which the proposed mining area is located.

Key rules governing such companies include:

- All such bodies corporate shall be required to register with the NMA for approval to participate in Small-Scale Mining of Precious, Industrial, and Sand Based Minerals and pay the specified fees.
- An applicant for a Small-Scale Mining Lease shall be allocated available mining land (not encroaching on areas of other Mineral Rights Holders) by the Chiefdom Mining Allocation Committee before the grant of the lease by the Ministry.
- In addition to the registration, a company shall apply for a Small-Scale Mining Lease and must fulfil the conditions set forth for the application of the prescribed Licence.
- A Registered Mining Company with foreign participation may employ a prescribed number of expatriate workers to supervise the operations of the mining in the field. Such expatriate workers must fulfil the

requirements of the relevant provisions outlined in the Local Content Policy and the immigration and labour laws of Sierra Leone before they are allowed to enter the mining areas.

● An applicant for the grant of a Small-Scale Mining Lease:

- Shall be accompanied by a plan of the area, over which the Licence is sought, drawn in such manner as the Director may require;
- Shall state the period for which the lease is sought;
- Shall give a statement with particulars of the programme of proposed mining operations, including the treatment method and the type of equipment/machinery to be employed in the operations;
- Shall submit to the Environment Protection Agency (EPA) and a copy to the NMA, proposals for progressive reclamation and rehabilitation of land disturbed by mining and for the minimisation of the effects of mining on surface water and underground water and an adjoining or neighbouring lands for consideration and approval before the commencement of any mining operation;
- Shall be accompanied by a report on the proposed marketing arrangements for the sale of the minerals (Precious, Industrial, and Sand Based Minerals) recovered.
- The area covered by a single Small-Scale Mining Lease shall not exceed 100 hectares and must not encroach on areas of other Mineral Rights Holders.
- An applicant for a Small-Scale Mining Lease shall pay all fees before the issue of the lease.
- A Small-Scale Mining Lease shall be revoked if (i) within a period of three months mining operations have not commenced under the said Licence or its renewal thereof; (ii) the holder fails to fulfil the conditions required by the small-scale mining provisions in force; (iii) the holder fails to submit reports as outlined below.
- The holder of a small-scale mining lease shall be required to keep accurate records of all the winnings and sales/exports on site at all times and to submit every 6 months accu-▶

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Sierra Leone office: 34 Charles Street, Freetown, Sierra Leone

► rate technical records of the operations in the Licence in such form as may be prescribed. Records of winnings, sales and/or exports shall be submitted monthly to the Director of Mines through the NMA regional office on the 10th day of the succeeding month. These records shall also be produced for inspection by the Director of Mines or an Authorised Officer. Diamonds recovered in small-scale mining lease operations shall be exported through the NMA under the Kimberley Process Certification Scheme.

- Small-Scale Mining Companies shall not be allowed to buy any precious, industrial, and sand based minerals from miners or dealers, but may sell to Dealers / Exporters only after obtaining written permission from the Director of Mines or an authorised Officer.

- All renewals shall be granted subject to the holder's fulfilment of the obligations required by the Laws and Regulations in force.

- A Small-Scale Mining Lease Holder intending to operate a dredge shall take out a dredging permit on payment of a prescribed fee.

Requirements for dealers

Dealers can apply for a prescribed Dealer's Licence on the recommendation of the Director of Mines and the approval of the Director General of the NMA, and after the payment of a prescribed fee. To be successful they must be registered to pay the country's Standard Assessment Tax.

An Applicant for a dealer's Licence is required to contribute to monitoring and rehabilitation funds.

A Dealer's Licence is issued for one year (with half-yearly licences issued in special circumstances) and renewal is subject to the dealer meeting performance targets set.

The Dealer is required to buy Precious, Industrial, and Sand Based Minerals only from an Artisanal or Small-Scale Mining Lease Holder and sell to any Exporter, and cannot buy from or sell to another Dealer. The Dealer must keep a record of purchases and sales of precious, industrial and sand-based Minerals acquired and to issue a numbered invoice/receipt for each purchase or sales transaction.

A Dealer must also submit monthly returns of purchases and sales to the Director of Mines through the NMA regional office.

Each Dealer can employ not more than five agents of Sierra Leonean nationality. On the recommendation of the Head of the NMA regional office, the Director of Mines shall approve a Buying Agent and issue a Dealer's Buying Agent's certificate on the payment of the prescribed fee.

Requirements for exporters

Export licence applicants can be individuals of any nationality or a registered company approved by the Minister of Mineral Resources on the recommendation of the Director General of the NMA.

One-year Exporter's Licences are issued by the Minister of Mineral Resources on the payment of a fee of US\$35,000 for diamonds,

and US\$7,500 for gold, and US\$5,000 for industrial and sand based minerals.

Exporters can employ buying agents approved by the Director General of the NMA on the recommendation of the Director of Mines, and issued with the prescribed Exporter's Agent's Certificate. Not more than five (5) buying agent certificates are issued under one Exporter's Licence.

Exporters can open foreign currency accounts in accredited commercial banks in Sierra Leone to finance their operations and to dispose of funds freely, but must show evidence of importation of all foreign currency inflows, before exporting any (precious) minerals.

Incentives

A person who gives information leading to the arrest of smugglers or illicit dealers of precious, industrial and sand-based minerals is compensated with 40% of the value of the goods confiscated. The identity of informants is not disclosed.

Tourists who wish to purchase diamonds, gold, industrial, and sand-based minerals as souvenirs can obtain permission from the Ministry on the recommendation of the NMA for such transactions.

They can purchase and export diamonds to maximum value of US\$1,000, gold to maximum value of US\$500, and industrial and sand based minerals to maximum value of US\$250.

Export duties shall be imposed in addition to a levy of 3% payable to NMA. ■

GEOLOGY

Dredging remains a feature of Sierra Leone mining

Rivers, beaches and lakes offer mineral opportunities

Sierra Leone has demonstrated potential for both alluvial and beach placers concentrated in stream sediments, or beaches and lakes.

The tributaries of some of the main rivers and lakes drain mineral rich areas such as the diamond fields of Kono and Tongo, the gold rich greenstone belts, the Kasila group of rocks – which are the main source of mineral sands (rutile, ilmenite and zircon) – and the Free-town complex, which is believed to contain platinum group elements (PGE).

Depth of weathering is considerable in the flat-lying western half of the country, which contains mineral sands and bauxites, while the eastern and central areas are hilly and rugged. This topography along with deep weathering and erosion of bedrocks has provided suitable conditions for the production and deposition of placers.

Secondary gold and diamond

The drainage systems of the diamond fields have been targets for dredging since diamonds were first discovered in the Gbogbora stream, Kono District, in the 1930s. The main rivers draining the diamond fields are the



Sewa, Moa, Bafi and Mano rivers, while the greenstone belts are mainly drained by the Pampana, Teye, Taia/Jong and Mabolle rivers.

In some rivers, such as the Bafi and Teye, many of the diamond gravels and sands contain gold and both are mined with gold being the by-product. Getting gold from diamond mining is quite common in diamond mining areas close to the greenstone belts, and these rivers have been dredged for both.

Other placer deposits

The predecessor of Iluka Resources/Sierra Rutile started using dredges to mine mineral sands in 1967 and the Sierra Rutile concessions still host one of the world's largest natural rutile deposits. The deposits are derived

from weathering of gneisses and amphibolites of the Kasila group, which remains largely under explored. This means there is potential for discoveries other than in Sierra Rutile's concessions.

The coastal plains that connect known mineralisation stretching from Liberia to Guinea are also a target for exploration, not only for rutile but also PGE. Other ore minerals present in Sierra Leone with the propensity of forming placers are cassiterite (tin), chromite and coltan.

Current state of dredging

Dredging is currently being done by a few small-scale mining companies, with Sierra Rutile running the only large-scale dredging operation.

Locally made dredges are common among artisanal miners, but a moratorium has recently been imposed on such practices by the National Minerals Agency as it goes against the Mines and Minerals act of 2009.

There is also potential for dredging to be used as means of providing construction sand to local contractors due to the depletion of sand from local beaches. ■

COMMODITIES

Vimetco rejuvenates bauxite assets

Global aluminium producer looks at local beneficiation options



Sierra Mineral Holdings 1 Ltd (SMHL) has been supplying bauxite to its parent company, globally integrated aluminium producer Vimetco, since 2008 when the group acquired the Sierra Leone bauxite assets of Sieromco.

Significant investment in the high-quality Sierra Leone resource and asset base has seen significant production expansion in the past five years.

Sieromco started mining in Sierra Leone in 1963 and continued until 1995 when the operations stopped as a result of the civil war in Sierra Leone.

The 321.7 sq km mining lease acquired by SMHL lies on the same belt as the world-class Guinea bauxite deposits. With reserves to support at least a further 10 years of production, and vast additional tailings pond reserves also suitable for beneficiation, SMHL Vimetco is the only operational bauxite mine in Sierra Leone and is the second-largest mining employer in the country.

The Sierra Leone bauxite of SMHL is used in Vimetco's alumina refining and aluminium smelting facilities in Romania. SMHL's Premium washed bauxite is considered to be among the top-quality feed products in the world. SMHL bauxite is purely gibbsitic, devoid of mono-hydrate (bohemite, etc) mineralogical phases, and most suitable for low-temperature digestion processes.

Since 2014, bauxite production and sales

have increased from 1.16Mt in 2014 to 1.78Mt in 2017 and is scheduled to ramp up its production and sales up to 2.02Mt in 2018. SMHL started its trial dry beneficiation bauxite production and sales in 2018 to assess its commercial viability in the industry.

SMHL has also been investing in new mining equipment and river transportation fleet, and the company has mounted a new, aggressive exploration campaign to build out current mineral resources of about 31Mt. It has managed to finance most of these investments with internally generated cash flow from the current operations.

"Under the current leadership team, SMHL-Vimetco has been extremely successful in meeting overall technical, organisational and most importantly financial goals of the company with the creation of value to the shareholders portfolio as well as making sustainable impact on the socio-economic development in the community and nation as a whole," a group spokesperson says.

"SMHL has embarked on a number of ambitious technical and infrastructure development projects that are in-lined with the current industry trend of value addition and creations that are expected to improve and optimise existing production chain by minimising wastages and keeping the business processes lean and effective."

A feasibility study on two proposed beneficiation routes – one to process live tailings from the current wash plant and a second to process stock tailings from SMHL's Gondama storage facility – has been completed.

The company has upgraded the road network between the mining pits, beneficiation facilities, and the loading port, to facilitate rising production, and has also upgraded conveyors and river-based material handling systems.

"SMHL's team is ambitious and determined to bring the first ever alumina production plant in Sierra Leone," the spokesperson says.

"This will create opportunities to fully optimise Sierra Leone's bauxite reserve base utilisation through value-addition to alumina hydrate and special alumina. To support a proposed alumina hydrate plant, SMHL will build a thermal power plant with up to 10MW capacity."

The group has also invested in a number of community projects in local chiefdoms, including a major new multi-purpose conference and community centre, canteen and cinema, power generation, and water borefield facilities.

Full package scholarship awards for students to attend university and pursue mining course degrees has been another forward-looking SMHL initiative. ■

vimetco
smhl

Vimetco – at a glance

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Building better communities

Koidu works to enhance Sierra Leone and regional sustainable development goals

Prior to the civil war, Sierra Leone had established an active mining sector built upon significant exports of diamonds, rutile and bauxite. The sector underpinned much of the country's formal economic activity, contributing 20% of GDP, as much as 15% of fiscal revenues, and accounting for more than 90% of exports. Mining and quarrying provided a livelihood for over 250,000 people, and employed about 14% of the total direct and indirect labour force. Despite the sector operating at only a fraction of its potential, its contribution was significant enough to qualify Sierra Leone as a resource-rich country.

The end of hostilities marked the start of a strong economic recovery.

The diamond mining sector has played an instrumental role in Sierra Leone's nascent economic recovery. Official exports have increased to 582,000 carats in 2006, with 84% of this amount being mined by artisanal and small-scale miners.

The World Bank has estimated that up to 40,000 people are directly engaged in mining for diamonds and that the associated population of immediate family dependents could include 100,000-to-200,000 people. If those people that are indirectly dependent on artisanal diamond mining through forward and backward linkages are included, the World Bank estimate reaches 200,000-400,000 people dependent upon artisanal mining for the greater part of their livelihood. This represents 4-8% of the population.

In recent years, economic growth has been principally driven by mining. The country's main exports are iron ore, diamonds, and rutile, and the economy is vulnerable to fluctuations in international prices. The mining industry accounted for 4.5% of the country's GDP in 2007 and minerals made up 79% of total ex-



"The provision of healthy and safe workplaces for our employees, our most valuable asset, is one of our fundamental responsibilities"

port revenue with diamonds accounting for 46% of export revenue in 2008.

The Ebola outbreak of 2014 and 2015, combined with falling global commodities prices, caused a significant contraction of economic activity in all areas. In 2017, increased ore exports, together with the end of the Ebola epidemic, supported a resumption of economic growth.

To ensure optimal contribution to national development, the Sierra Leone Government is committed to promoting transparency and accountability. In 2014, Sierra Leone became a country compliant with the Extractive Industries Transparency Initiative (EITI) process. The Peace Diamond Alliance (PDA) was created and the Kimberley Process Certification Scheme (KPCS) implemented, all fostering a stable and conducive environment for effective, legal and transparent mining practices.

Koidu is 334km east of Freetown, the capital city of Sierra Leone, and falls within the Kono district.

Since its inception Koidu Limited has been committed to responsible and ethical diamond mining.

Four of the top-20 largest rough diamonds recovered globally were unearthed in Sierra Leone, all of them recovered contiguous to Koidu's ground.

"This serves as an additional booster for stakeholder and investor confidence, which currently benefits the state and operators alike," a Koidu spokesperson said.

In 2009 Koidu embarked on a bankable feasibility study (BFS) that would later form the basis of an expansion project. The BFS was carried out to attract further investment from the stakeholders and shareholders by defining the resources hosted within the mining concession within an acceptable level of confidence.

The BFS defined the resources available, through the extraction of kilometres of core which was studied – down to a microscopic level – and modelled in 3D to assess the feasibility of continued open-pit mining. This 3D

Koidu Limited – at a glance



Ownership: Privately owned by BSG Resources Limited (BSGR) through its subsidiary OCTÉA Limited

Established: 2003

Address: 84 Wilkinson Road, Freetown, Sierra Leone

Tel: +232 78 874 912

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Koidu supports education through granting of scholarships in various fields of studies, benefiting more than 280 Sierra Leoneans since 2011

geological model formed the crux of the future of the mine and confirmed the viability of the expansion project.

Once the resource was defined within the acceptable range of confidence, the expansion project was rolled out. The basic mine plan outlined open-pit mining with four cutbacks on the K1 resource, and open-pit mining with two cutbacks on the K2 resource.

Once the mine plan was concluded along with the mining rates, optimisation of the processing plant design was finalised. Since an upgrade of the existing 50 tonnes per hour (tph) plant was not deemed feasible, a new processing plant and associated infrastructure were designed and built, which enabled a higher throughput capacity and a quicker return on investment.

In 2016, following the completion of open-pit mining on the K1 and K2 pipes, the company transitioned to underground mining operations. The fourth cutback on K1 was deemed uneconomical with the strip ratio at 27:1. But the three completed cutbacks enabled more than 3Mt of ore to be mined to about 300m vertical depth from the open pit.

K2 saw two cutbacks and about 2Mt of ore mined to circa-200m depth.

The transition from open pit to underground at K1 is well underway and Koidu has developed more than 6km of underground tunnels to service sub-level open stoping underground operations.

Enhancing the SDGs

In September 2015, the UN member states agreed on a set of 17 Sustainable Development Goals (SDGs), which represent the global agenda for equitable, socially inclusive, and environmentally sustainable economic development to be reached by 2030.

Koidu Limited has the potential to significantly contribute to the achievement of the SDGs in Sierra Leone.

Through its corporate social responsibility and its operations, the company promotes direct local employment to over 800 people and forward and backward linkages directly or indirectly associated with their employment, including family members of miners and those engaged in miniature jobs for the miners, generating increased labour opportunities. In addition, through its partners, contractors and service providers, the company generates additional employment opportunities.

Koidu supports education through granting of scholarships in various fields of studies, benefiting more than 280 Sierra Leoneans since 2011.

Through the Community Development Agreement (CDA) the company funds local projects in co-operation with communities. Through partnerships with government and civil society, Koidu ensures that benefits of the mine extend beyond the life of the mine itself, fostering a positive impact on employment generation, economic growth, environmental sustainability and social capital.

Koidu is committed to responsible mining,



Koidu provides direct local employment to more than 800 people

limiting waste production, safety, incorporating sustainable technologies to promote the wellbeing of local communities, curbing emissions, and improving environmental sustainability. Committed to the SDGs, the company has benefitted from improved relationships with the government of Sierra Leone and the various communities in which it operates.

“Our most important responsibility is to fulfil the expectations of our stakeholders and to continuously improve our social, environmental, and economical performance while ensuring the sustainability and operational success of our company,” Koidu’s spokesperson says.

“The Corporate Social Responsibility (CSR) approach is our main guiding principle in this matter. We evaluate all of our operations and their impacts on the communities, in which we operate, while considering social, economic, ethical and environmental impacts.

“With the co-operation of CSOs and NGOs in our operating region, we launched a number of social projects focused on stimulating environmental awareness, preserving nature, and assuring sustainable development in our communities.

“The provision of healthy and safe workplaces for our employees, our most valuable asset, is one of our fundamental responsibilities. We determined occupational health, safety and fleet safety as priority areas for improvement.

“With this in mind, we aim to strengthen our occupational health and safety department, through onsite training and equipment provision.”

Koidu conducts stakeholder engagement efforts within the framework of national and international principles and system applications. “We support sustainable development in communities where we operate and contribute to the welfare of society through Village Resettlement Committees (VRCs),” the spokesperson says.

“A total of 357 houses have been completed since 2012 under the Resettlement Action Plan RAP2 and residents within our operational areas have been satisfactorily resettled. A total of 132 houses are presently under construction by 25 contractors employing over 800 skilled and unskilled workers from the local community.

“A new site for the planned construction of the next 72 houses has been demarcated and the completion is expected by the end of August 2018.”

Koidu supports operations related to preserving and developing water resources, a key contributor to environmental sustainability.

The company provides water facilities in the resettlement areas and affected communities and undertakes thorough environmental impact assessments before conducting any mining operation to avoid diversion of natural resources and minimise the environmental impact of its operations.

Since 2011, Koidu has provided over 280 scholarships at various levels for local beneficiaries to enhance their educational objectives. This support has helped beneficiaries to advance their educational pursuits.

Economic development

Apart from the company’s taxation and royalty payments at local and national levels, Koidu contributes to the economic development and growth of the country by leveraging on its investments at local level – building new infrastructure, introducing new technologies, increasing knowledge transfer, training and workforce opportunities.

Formal education and specific vocational training can lead to qualified jobs in this sector. This know-how can then be used in other parts of the industry/manufacturing sector and support structural transformation in the economy.

The company plans to generate new economic opportunities for citizens and local communities, including jobs, training, and business development relating to mining operations, associated service providers, or new local economies linked to the mine.

“This will help drive economic development and diversification through direct and indirect economic benefits and by spurring the construction of new infrastructure for transport, communications, water and energy,” Koidu’s spokesperson says.

“The company will continue striving to achieve the right balance between business and social development, environmental protection, sustainable development and investment promotion.” ■

Newfield advances Tongo diamond development plans

Project is regarded as 'generational asset' with significant potential for further discoveries

Early in 2018, ASX-listed Newfield Resources (NWF) merged with Stellar Diamonds, a company listed on the London Stock Exchange (AIM), and raised fresh equity of A\$40 million to fund the accelerated development of the high-value Tongo diamond project in eastern Sierra Leone.

Key shareholders of Newfield have wide ranging business interests including property development, pharmaceutical, building materials and education.

The projects consolidated by the merger are situated in the major diamond producing areas of Sierra Leone and Liberia, with the primary asset the high-grade Tongo project comprising two adjacent mining licences that cover more than 134 square kilometres and host 11 known kimberlites.

The project combines the kimberlite dyke hosted historical mineral resources on adjacent mining licences. It is subject to a Tribute Mining Agreement between the two mining licence holders, being Newfield's subsidiary company Sierra Diamonds Ltd and Octea Mining's subsidiary company Tonguma Ltd.

Newfield also holds a 100% interest in the Allotropes Alluvial Diamond Project on the Sewa River in the Southern Region of Sierra Leone, and a 90% interest in exploration licences in northwestern Liberia, where high-value diamonds and kimberlitic indicator mineral anomalies were delineated by previous exploration work.

Newfield's Tongo development plan will be focused on achieving an underground mining operation on two of its 11 diamondiferous kimberlites by the latter part of 2019.

The development and mining phases of the Tongo project will involve significant employment and training opportunities for the local community. The project is regarded as a generational asset with significant potential for further discoveries and expansion of its mineable resource. To date, over US\$49 million has been invested in exploration, scoping studies and governmental approval processes on the project.

FEED programme

The front end engineering and design programme (FEED) for Tongo started in the March 2018 quarter and is being co-ordinated by independent consulting groups, Paradigm Project Management and SRK Consulting. The FEED will more precisely define the technical requirements of the project and deliver an optimised underground mine design and treatment plant layout. This work will also refine the final capital expenditure estimate and operating cost budgets.

The mine is targeted to enter production in late 2019. The FEED programme is on track for completion in the December 2018 quarter.

Activities completed to date include:

Newfield Resources – at a glance

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Web: <http://newfieldresources.com.au>

Directors: Anthony Ho, Michael Lynn, Robert Ang

Market capitalisation (August 24, 2018): A\$98.8 million

- Drone surveys for detailed mapping of the planned mine layout were flown, and preliminary mine site, plant, office and accommodation layouts have been prepared, based on the significant existing infrastructure which includes roads, offices, workshops, stores, accommodation and the old alluvial old plant site.
- Design of a 50 tonnes per hour dense media separation plant based on a second-hand plant acquired from Octea has been completed. The plant will incorporate new scrubbing and crushing units, and a completely new recovery section, incorporating primary and secondary Debech (De Beers) CDX118CD (dry feed) X-ray machines.
- Geotechnical and geohydrological fieldwork was undertaken by SRK engineers, and the sites of the underground portals for both the Kundu and Lando underground mines were selected.
- Environmental monitoring and reporting has commenced.
- Stakeholder engagement and commencement of Community investment initiatives have commenced.
- Upgrading of the gravel road between Mano Junction and the Tongo Project was completed. This road is important to the logistical support for the mine. Travel time between the tarred road and the Tongo Project has been shortened from approximately 90 minutes to 35 minutes.
- Refurbishment of a 5tph DMS plant for bulk sampling work, and addition of a dual X-ray recovery system was completed. This plant is currently processing a bulk sample to deliver initial carats for the updated Mineral Resource estimation, and to improve confidence in the diamond revenue model. In addition, there are several thousand tonnes of kimberlite material stockpiled at the Project. Processing of this material will generate revenue for further project development.



Diamonds from the Tongo project recovered during sampling in 2012

- Dismantling and relocation of the 50tph production plant from Kono to the Tongo Project was completed. Construction of the new plant will follow once new components arrive from South Africa.
- Detailed underground mine design will commence August, once the geological model has been updated following completion of the drilling programme.

Drilling and mineral resource update

Boart Longyear was appointed to undertake a 10,000m mine development drilling programme to complement the FEED. Drilling was completed during July 2018.

This campaign was designed to more precisely delineate the geology and morphology of the Kundu, Lando and Tongo kimberlites (and associated country rock) within the first two levels of planned underground mining. It is also expected to bring a fourth kimberlite dyke (Kpandebu) into resource. This will facilitate more precise mine planning and thus assist in de-risking the initial phases of mining. The drill collars are at approximate 50m intervals along the strike of the dykes, infilling previous resource drilling work that was at 200m intervals.

Independent geological consulting group, MPH Consulting of Canada (MPH), has been retained to update the mineral resource estimate for the Tongo Project. The additional geological information provided by the current drilling campaign is expected to bring some shallow portions of the previous resource into the indicated resource category, and to bring some previous Exploration Target zones into the Inferred Resource category.

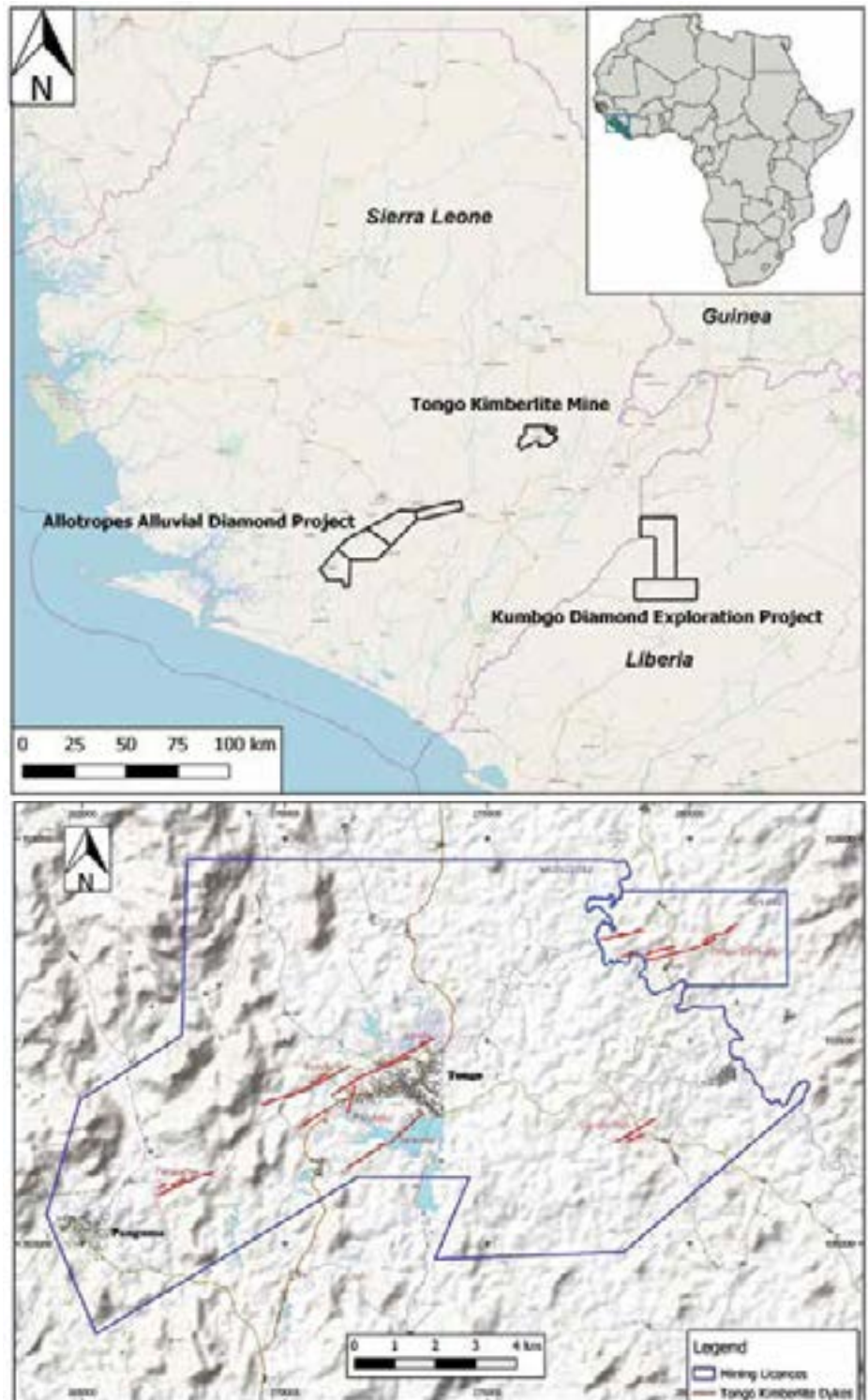
The updated JORC-compliant mineral resource estimate is expected to be completed in the December 2018 quarter.

Mineralisation and history

Alluvial diamonds were mined at Tongo from 1956 to 1995, initially by Sierra Leone Selection Trust (to 1971) and subsequently by the National Diamond Mining Company. Work by the Sierra Leone Geological Survey in the 1960s and 1970s estimated that 1.6 million carats were produced in the first 10 years. However, it is estimated that up to 4.5 million carats were mined subsequently. Today, artisanal miners still produce diamonds from remnant alluvial deposits in the vicinity of the kimberlite sub-crops. But the kimberlites themselves were only mined to a few metres depth in the weathered zone, and are therefore virtually untouched.

Delineation and resource drilling of select kimberlite dykes, in combination with micro-diamond and bulk sampling, was carried out by Tonguma Ltd and Stellar Diamonds plc between 2011 and 2012. This data along with the recently completed shallow drilling programme (to approximately 100m), is being incorporated into an updated mineral resource estimate.

Grades reported during the sampling programmes ranged between 0.8 and 2.7 carats



Top to bottom: Newfield Resources projects in Sierra Leone and Liberia; Tongo diamond project in Sierra Leone's Kenema District

per tonne, and the average diamond values were modelled at between US\$197 and US\$270 per carat. There are a further eight dykes that have been discovered to date, and all of those tested are diamondiferous. All of the dykes are open at depth.

Currently operational kimberlite dyke mines in South Africa continue to operate at below 700m depth.

The road ahead

Newfield's development plans for the Tongo project will see the creation of another substantial mining operation in Sierra Leone.

With strong support from local communities and government agencies, Newfield will

forge an effective partnership among all stakeholders. Objectives include development of a long-life mining operation that will generate sustainable returns as well as provide significant economic benefits to Sierra Leone and its local communities.

Newfield's management team has over 150 years of combined experience in discovering and developing diamond mining operations.

The core values and culture of Newfield drive application of the best standards of technology, safety and environmental practices. Above all, we believe in treating our host country, its people and its lands with the utmost respect. ■

Marampa rebuild signals new era of co-operation

Vision for high-grade iron ore project has key technical, community dimensions

The Gerald Group is one of the world's leading private commodity-trading companies. Over the past 55 years, Gerald has developed a successful track record in the physical merchandising, development, trade and financing of commodities and commodity-linked assets, with annual turnover greater than US\$8 billion and assets exceeding US\$2 billion across an expansive global footprint.

In addition to the robust trading business, historically focused on base and precious metals, Gerald has developed an investment platform over the past several years to gain access to strategic offtake to feed its trading business.

Gerald has leveraged its experience and vast network within the metals and mining sector with technical expertise and operational capability, which has deployed in excess of US\$3 billion of financing into mines, refining facilities and logistics assets across the world. The group's investment capability spans a variety of transactions across various production stages and jurisdictions.

The team brings technical expertise, capital and strong strategic partners.

Gerald has a successful track record in developing early stage assets and bringing them into production. It brought the Soremi copper-lead-zinc project in the Republic of Congo from early stage exploration to become the first copper cathode producer in the country's history and continue to expand it with its strategic partner, China Gold.

In Russia, Gerald provided seed capital to Russian Copper Company, to bring the Mikheevsky Copper project from early stage development into production, and now expansion, as one of the largest copper projects in the region.



Partial view of the Marampa processing facilities, which have been well maintained through a care and maintenance programme implemented by Gerald, despite the harsh environment

Other current assets include the Bisie Tin project in the Democratic Republic of the Congo, and the publicly listed Taiwanese precious metals refiner Solar Applied Materials.

Although each project is unrelated, each structured investment is expected to provide Gerald's trading arm guaranteed offtake for years into the future. Another landmark transaction was Gerald's funding of the construction of Tiger Resources Copper Cathode plant in the DRC.

Marampa

SL Mining Ltd, a limited liability company incorporated in Sierra Leone, is a wholly owned subsidiary of Gerald engaged in the exploration, development and production of iron ore concentrate. Its project is located in Marampa in the Port Loko District, the northern province of Sierra Leone.

SL Mining was awarded a renewable Large Scale Mining Licence (ML) granted under the Mines and Minerals Act, 2009 on March 2017 for a term of 25 years. The ML covers the surface area that was once granted to London Mining plc and is better known as the Marampa project.

During 2017, SL Mining successfully negotiated a Mining License Agreement (MLA) which provides economic stability and international protections that was ultimately ratified by the government of Sierra Leone parliament on December 6, 2017. The

government understands the importance of foreign investment and once SL Mining demonstrated its commitment and capabilities, all governmental formalities were completed in order to ensure the Marampa mining project could get back into production as quickly as possible on a sustained basis.

SL Mining is working on rehabilitating and reconfiguring the project for a planned production restart at the end of calendar year 2018. The total resource of the project is estimated at one billion tonnes of iron ore grading 32% Fe, with potential to expand the resource. The historical project includes three production assets, now obsolete, and associated infrastructure built by London Mining between 2011 and 2014.

With the commitment to spend approximately US\$300 million to bring this defunct project into production with sustained output of 6.5 million tonnes per annum of high-grade concentrate grading higher than 65% Fe, SL Mining's investment will lead to material job creation in Sierra Leone as well as other direct benefits to surrounding communities and much needed revenues for the government.

History and operational turnaround
Gerald initially became involved in the Marampa mining project in November 2014 when it provided a large structured offtake credit facility to Timis Mining Corporation

Gerald Group – at a glance



Revenue: c\$10 billion pa

Assets: c\$3 Billion

Established: 1962

Employees: 200

Head office: One Strand, Grand, Buildings, Trafalgar Square, London, WC2N 5HR, UK

Tel: + 44 (203) 805-2000

Web: www.Gerald.com

(SL) Limited (TMC), to ensure continuity of operations after London Mining went into administration and the Marampa mining project was transferred to TMC. However, the Marampa mining project never had the opportunity to perform as intended and shut down in March 2015, only months after TMC took over the project.

"After we lent the money, the plant performance failed and never managed to produce the grade we were looking for," recalls Craig Dean, CEO of Gerald Metals. This comingled with extremely challenging market conditions, the world's worst Ebola outbreak, and lack of viable transport for its product.

The Marampa project has a history of shut-downs. The mine was originally exploited by Delco, then London Mining, and finally TMC.

The iron ore industry is also not one to enter lightly as four producers control 80% of the cost curve, with an ability to ramp up at will, giving this oligopoly a major influence on prices. A smaller-scale iron ore project that does not contain high-grade (>65% Fe) concentrate is destined for failure in the current market conditions, as the current market and forecasts dictate materially higher premium levels for quality product.

So the Gerald team had to redesign and reconfigure the previous project for future success.

"When TMC shut down, we had a major problem," says Gerald's head of operations for SL Mining.

"We stepped into a country that just got struck with the world's worst Ebola outbreak, and had to deal with an asset that never really performed and had exhausted its tailing feedstock.

"TMC also had significant project finance debt overhang that rolled over from London Mining to TMC as part of the deal TMC negotiated at that time. All those factors, including the massive historical debt, a project that could not produce >65% Fe grade, and a plant that would become obsolete the minute it would exhaust its tailing resources, was doomed to fail. It appears as if the previous project sponsors, London Mining, TMC, and the banks all depended on iron ore prices, which today we know was not a good strategy especially when prices collapsed from above US\$100 per tonne to less than US\$40 in 2015 and 2016."

When Gerald became involved on the ground in 2015, the sight was not pretty.

"It was gloom and doom at some many levels, and not just with iron ore prices in the sub-US\$40/t. It was clear that other than Gerald nobody wanted to deal with the Marampa core issue that it was a project that failed once more, had no foreseeable prospect and yet required immediate care and maintenance funding to maintain security and integrity on site."

Gerald was the only project stake holder willing to deploy these significant sums of money in a depressed iron ore market, which

would give hope to the local community, retain local jobs, and provide a glimmer of hope that this three-times failed project may have a future if under the right project management team.

Once approached by the previous stakeholders for Gerald to fund, Gerald immediately put a plan in motion, starting with protecting and maintaining the project assets, which can quickly degrade in a harsh tropical environment and therefore need to be preserved for a hope of a restart.

So in April 2015, following plant shut-down, Gerald started to fund a care and maintenance programme in order to try to safeguard its investment into TMC and ensure that the Marampa mining project could be restarted in the future. The company has always believed there was an important social aspect in that the Marampa mining project once employed thousands of local people and the Sierra Leone government would support a "new" investor who had a viable plan of restart and ensure protection of the project site to generate current and future employment.

Gerald was well advanced in a detailed due diligence programme and analysed every technical and operational report, consulted with former project employees, reviewed cost scenarios, and thoroughly reviewed the plant to establish what conditions and configurations were needed for the Marampa mining project to be able to restart.

With a thorough review of equipment on site, supplemented by engineering test work, the Gerald team identified a viable configuration whereby new equipment would be brought in and the flowsheet would be rearranged in order for the plant to produce from a run of mine a true high grade concentrate to be called "Marampa Blue".

"We were able to define a configuration that needed six months rehabilitation and

construction time and a manageable investment programme to produce two million dry tonnes per annum of high-grade concentrate which will achieve plus-65% Fe," Craig says.

"This initial phase will then be used as a stepping stone to build the second and larger phase."

Without this phased out approach, the project would have required 30 months for design, funding and construction. So it was a win-win plan for Gerald and the government, with a quick path to job and revenue creation for the country.

Restructuring

While Gerald worked heavily on the turnaround plan, between London and South Africa, the group also focused on trying to ensure a proper financial restructuring of the project.

It attempted to work with TMC's lenders and other stakeholders with a view to reaching a commercial solution to ensure the future of the Marampa mining project, but no agreement was ever reached.

Following the government's cancellation of TMC's mining licenses, Gerald's wholly-owned subsidiary, SL Mining, applied for and received in March of 2017, a new large-scale mining licence covering a similar area as the previous Marampa mining project.

SL Mining was awarded the licence following the application process, which included a viable plan for a quick restart and substantial due diligence on the Marampa mining project, and is now the sole operator of the Marampa mining project holding the ML, MLA and land leases and which is now a debt free, unleveraged project.

The plant and equipment, however, was still owned by TMC. But in July 2017, the Sierra Leone government, through the National Minerals Agency (NMA), invoked Section 54 of the Sierra Leonean Mines and Minerals Act, ▶



The Marampa project power plant, which will need complete overhaul before restart



Signing of EPC Contract with CNEEC on June 28, 2018, in Beijing by the Group CEO Craig Dean and Senior Vice President Frederic Lotti for Gerald, and by President Zhang Yanfei and General Manager Li Zhigang for CNEEC

► 2009 (ACT) by issuing a certificate to TMC. The government had been very transparent with all stakeholders of TMC and secured lenders that it would enact section 54 if the previous owner did not reach a deal with SL Mining on the existing plant facilities.

According to section 54, when a project owner loses its mining licence, it is required to remove its plant and equipment from the site. In turn, the NMA, if it deems such assets necessary for the project care and maintenance, can elect to refuse such removal by issuing a certificate and pay “reasonable compensation” to the asset owner. Once the certificate is issued, the new mining licence holder, SL Mining, effectively becomes the new title holder of the assets with obligation to reimburse the government when the payment of the “reasonable compensation” takes place.

The Sierra Leone government, and separately SL Mining, engaged independent third party consultants to perform a valuation in accordance with the ACT and estimate a value for the “reasonable compensation”. This estimate came within a range of US\$4 million to US\$16 million and the government is now in the process of finalising its process.

With TMC’s mining licence cancelled, loss of land lease rights, and with section 54 invoked, all project stakeholders, including Gerald, incurred substantial losses from the failure of London Mining and TMC. But the process followed by the Sierra Leone government was legally thorough and very systematic and will withstand potential legal challenges it may face from the previous project sponsors.

“Overall and throughout this process, we were very impressed by the GOSL and the

local community leaders,” Craig says.

“Reviving and creating a sustainable Marampa mining project was always their top priority and all their decisions were based on this principle and nothing else.

“They put Gerald through a very high level of scrutiny at the technical, financial and fiscal level regarding the restart plan and operation. We have a lot of experience dealing with governments in Africa and we’ve rarely seen anything like this. The government of Sierra Leone and the community leaders were highly demanding project stakeholders and we had a lot of respect for this.”

Today and the future

SL Mining has concluded an agreement with a Chinese state-owned enterprise to work on the engineering, procurement and financing of the project.

In June 2018, CNEEC (China Electrical Engineering Corp), Gerald, and SL Mining concluded an EPC and finance contract for the construction of both phases of the project for an overall investment programme of approximately US\$300 million.

SL Mining’s plan has been to commission this mine by the end of 2018, and executing this agreement helps ensure this goal will be achieved. All of this was completed while there was a change in government from the ruling APC party to SLPP under the leadership of Julius Maada Bio, the president of the Republic of Sierra Leone.

“Gerald has only been welcomed by His Excellency and we look forward to full government support as we bring this project back into production. His Excellency has made key supporting statements to reassure SL Mining that his number one priority is the

creation of local employment and a new revenue stream,” Craig says.

In the first phase, the project will directly and indirectly create more than 1,000 jobs, increasing in the second phase to 2,000 people. SL Mining aims to source at least 90% of its staff locally, a highly improved ratio compared to London Mining’s, and to implement a robust training programme for its workers.

Community

SL Mining recognises that engaging stakeholders is crucial to the success of every project and implemented a number of initiatives to improve the lives of the community stakeholders.

For example, while negotiating the MLA with the Sierra Leone government, SL Mining agreed to increase the royalty payment to the hosting community above the level historically paid by London Mining and TMC.

SL Mining’s involvement goes beyond its monetary obligations, with commitment to prioritise hiring of nationals in its work force.

In 2018, about 150 local villagers were hired to build fire belts and road repairs. In addition, about 300 nationals are currently on SL Mining’s labour force, which is expected to double by year end.

An information centre in Lunsar was also set up by SL Mining in September 2017 to facilitate an exchange and grievance system.

Some of the key community initiatives that SLM is working on include supporting construction of local primary schools, road and drainage rehabilitation, training, construction of water boreholes and pumping systems, and hosting of community events such as a SL Mining-sponsored football league. ■

FUTURE OF MINING

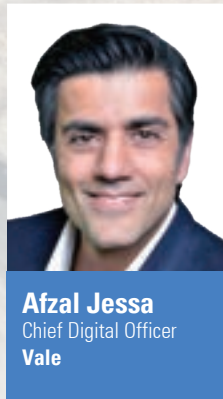
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GLOBAL LEADERSHIP REPORT

Preparing for transformation

Survey results



SURVEY



518 The number of respondents to the industry-wide digital survey

DRIVERS

Digitisation



Increasing Regulation

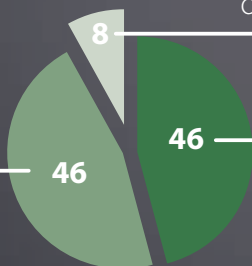


Digitisation and **Increasing Regulation** were by far the greatest drivers of transformation

IMPORTANCE OF TRANSFORMATION

It's becoming increasingly important

+++



It's not important to our business



It's very important

+++

EMPLOYEE ENGAGEMENT

Industry rated **6.5 out of 10** for communication of key messaging between the leadership group and employees



EXECUTION



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