ALIGN
RESEARCH

Equatorial Mining & Exploration

31st July 2019

Consolidation vehicle to acquire and upgrade artisanal tantalum mines in central Africa which provide 60% + of world production.

Equatorial Mining & Exploration (EME) was established in 2012 focused on developing industrial mineral assets in Africa. EME gained control over 550km² of Nigerian coal licences, but the initial attempt to commercialise proved unsuccessful. The end result was a boardroom clear-out and the arrival of a new management team which has masterminded the acquisition of Eastinco and that has a JV deal with the artisanal coltan mining Kuaka co-op in Rwanda. This initial transaction looks to be the blueprint for a series of copy-cat deals which offer a highly compelling opportunity to provide strong and sustained earnings growth.

New regulations forcing artisanal miners to improve H&S or shut down

The Kuaka co-op deal sees EME get an 85% stake in the mine for a US$500,000 cash injection to upgrade the operation. EME could do very nicely as ahead of an expected 5-fold increase in production, the locals have already achieved up to US$125,000 revenue and a net profit of US$75,000 per month.

Ultra-rare tantalum is a vital component in smart phones & computers

Coltan is refined to produce tantalum, one of the rarest elements on the planet. Tantalum capacitors have an extremely high capacitance packed in a small space, allowing for the increased functionality of smart phones.

Development of its own more profitable mines in the medium term

The acquisition of Eastinco will give EME its own mining licences which the team plans to develop to create more profitable independent mining operations.

Risked conservative NPV suggests a 0.0468p target price

Our conservative valuation shows the potential. We initiate coverage of EME with a target price of 0.0468p and **Conviction buy** stance.

Table: Financial overview

Year to end Dec	2017A	2018A	2019E	2020E
Revenue (£'000s)	-	-	1,187	9,188
PTP (£'000s)	(309)	(221)	(658)	1,766
EPS (p)	(0.005)	(0.003)	(0.0033)	0.0045

Source: Company accounts & Align Research

This investment may not be suitable for your personal circumstances. If you are in any doubt as to its suitability you should seek professional advice. This note does not constitute advice and your capital is at risk. This is a marketing communication and cannot be considered independent research.

CONVICTION BUY

Target price – 0.0468p

Key data

EPIC	EM.P
Share price	0.04p
52 week high/low	0.3p/0.01p
Listing	NEX
Shares in issue	15,259.85m
Market Cap	£6.1m
Sector	Mining

12 month share price chart

Analyst details

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IMPORTANT: Equatorial Mining & Exploration is a research client of Align Research. Align Research holds an interest in the shares of EMP. For full disclaimer information please refer to the last page of this document.

Business overview

Equatorial Mining & Exploration Operations

Equatorial Mining & Exploration (EME) is an Africa-focused mining and trading company where a new management team is seeking to broaden the focus in search of long-term profitability and shareholder returns. The new focus is on tantalum production in Rwanda, but EME also has legacy coal interests in Nigeria.

• **Rwanda** – EME has recently acquired Eastinco which is being used as the basis on which to build a Rwanda-focused tantalum mining and trading consolidation vehicle. There is a highly attractive opportunity in Rwanda to consolidate existing coltan mining operations, helped by recent changes in regulations. Small-scale mining operations are inefficient, but even so, these coltan mines have a recent production history and are innately profitable even at a fairly low level of production. EME plans to modernise, mechanise and implement health and safety measures. In addition, the company will explore opportunities to expand the size of the mining operation at these joint venture sites as well as pursue its own mining opportunities.

• **Nigeria** – The company controls coal licences in southern Nigeria including the St Leonard Mine in Kogi State. An initial attempt to commercialise the activities at the St Leonard coal assets was unsuccessful and presently the company is reviewing new opportunities to exploit these assets.

EME's first joint venture deal is with the Kuaka Co-operative. Source: Company

Coltan

Coltan is a hard blue-grey metallic ore which is a combination of columbite and tantalite that can be refined to produce tantalum which has the chemical symbol Ta and atomic number 73. Tantalum is a rare element used in the electronics industry for capacitors and semi-conductors which find their way into mobile phones and computers.

Around half of tantalum consumed annually is used by the electronics industry as powder and wire for capacitors. Tantalum capacitors have an extremely high capacitance packed in a small volume and so are perfect for shrinking electronic devices. The element is also a critical component for use in the manufacture of semiconductors where a process called physical vapour deposition allows tantalum to be spluttered onto the semiconductor substrates.

Tantalum is also used in engine turbine blades and chemical processing equipment due to the metal's high melting point and corrosion resistance. Other applications include ballistics, surgical implants and closures, cemented carbides for cutting tools along with the powder being used in optical applications.

Tantalum Supply and Demand

Coltan is predominantly found in central Africa where its mining has courted controversy as it has been deemed to have helped finance conflict in the Democratic Republic of the Congo. This has resulted in the main buyers requiring that all mineral exports from Rwanda are traceable through a tagging system to prove they are conflict-free.

Country	Mine production					Reserves
	2014A	2015A	2016A	2017A	2018E	
Congo (Kinshasa)	200	350	370	760	710	na
Rwanda	600	410	350	441	500	na
Nigeria	na	na	192	153	150	na
China	60	60	94	110	120	na
Brazil	150	115	103	110	100	34,000
Australia	50	na	na	83	90	76,000
Ethiopia	na	na	63	65	70	na
US	-	-	-	-	-	-[1]
Other	140	117	45	83	100	na
World total	1,200	1,100	1,220	1,810	1,800	>110,000

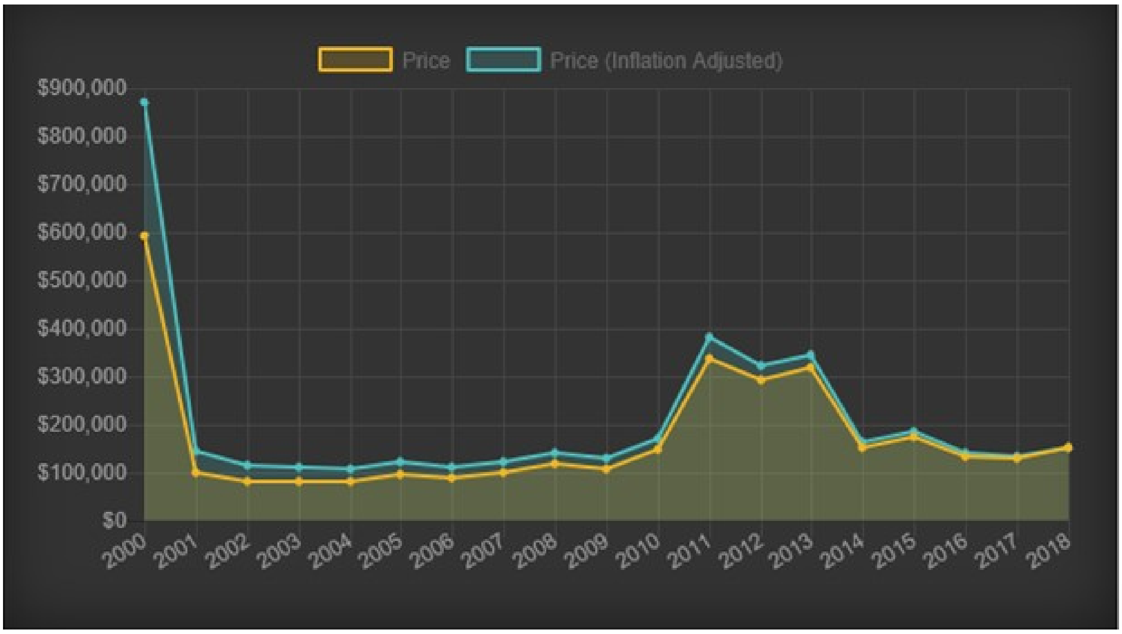
[1] - The United States has about 55,000 tons of tantalum resources in identified deposits, most of which were considered uneconomic at 2018 prices for tantalum.

World mined tantalum production and reserves. Source: US Geological Survey, Mineral Summaries Annual Reviews

The big buyers of coltan/tantalum are Starck, Nobel, Apple, Tesla and Foxconn Technology. Some of these need little introduction but H.C Starck Tantalum & Niobium GmbH is part of the Japanese JX Nippon Mining & Metals (JXTG Group). Hon Hai Precision Industry Co., Ltd., which trades under the name of Foxconn Technology Group, is better known as Foxconn, a Taiwanese multinational electronics contract manufacturing company.

Tantalum price

Ta2O5 price volatility has been relatively muted over recent years, with EME currently reporting a local buying and selling price of approximately US$145,000 per tonne for local sales of 100% pure Ta2O5 in Rwanda and US$165,000/t achievable for international sales.



Tantalum price (US$ per tonne) since 2000. Source: Metalary.

Outlook

Looking ahead, commodity market researcher Roskill in its report entitled "*Tantalum: Global Industry, Markets & Outlook 2018"* predicted that the pattern of tantalum supply will change dramatically reasonably quickly which is seen to begin to diminish the importance of Central Africa. There are slightly different numbers being reported from various sources, but Roskill believes that mine supply figures for 2017 show that Africa accounted for 59%, South America 18% and Australia just 3%. However, Roskill reckons that supply of by-product tantalum from lithium mining in Australia will really begin to kick in, which could boost that country's market share to 20%. At the same time, mined supply from South America is forecast to double by 2023.

That said, there seems to be little let up in demand, with Roskill forecasting that demand for tantalum will grow by 4.5% per annum over the 2018 – 2027 period. The research house expects that capacitors will remain the largest single market due to the demand for increased functionality of smart phones. Over this period, the researcher reckons that shipments of smart phones will rise by 3% per annum, which all looks to be down to the developing economies adopting technology and development internet infrastructures. Additionally, Roskill sees demand for tantalum in superalloys climbing by 7% per annum, this healthy compound growth rate is largely due to demand from the commercial aerospace sector.

Rwanda

The Republic of Rwanda lies in Central and East Africa. It is one of the smallest countries in Africa covering 26,338km², which is about a third the size of Northern and the Republic of Ireland. The country has a mainly young and rural population of 11 million which makes Rwanda one of the most densely populated countries in Africa. The country is seen as being very modern, rather like South Africa but noticeably cleaner with high employment. There is low corruption compared to the neighbouring countries and Rwanda distinguishes itself as a country that actually lobbied to join the Commonwealth.

Map of Rwanda. Source: Global Black History

Rwanda's developing economy suffered following the 1994 genocide and today the economy is mostly based on subsistence agriculture, with coffee and tea representing the major foreign exchange earners. Post the genocide, Paul Kagame of the Rwanda Patriotic Front become Prime Minister in 2000. He is an economist who has modelled Rwanda on Singapore's parliamentary system, with a powerful leader, but probably at the expense of any really proper democracy.

The country's main mineral exports are ores processed to extract tin, tantalum and tungsten, and some gold and gemstones. The sector presents enormous opportunities especially in ores, processing and diversification with majors like Nobel and Glencore active in the country. Metals are the second largest export in the Rwanda economy and in 2015 were responsible for generating US$149 million of foreign exchange. The government set a target of increasing mineral exports to US$400 million by 2017/18. Another target is to increase the mining sector's contribution to GDP from 1.2% to 5.7% with the hope of boosting employment in the sector from 37,000 to 60,000.

Rwanda is very pro-business and pro-investment which is well illustrated by the country not imposing any foreign exchange controls which means that the currency is freely convertible. The World Bank's "2018 Doing Business report" showed Rwanda being ranked number 41 out of 190 countries for ease of doing business, a rise of 15 places since a previous such survey. In fact, the country was singled out in the latest report as having implemented the most reforms over the past 15 years.

Growth in Rwanda is good and there is an improving trade balance as the country is taking steps to ensure that it remains an attractive destination for investors. Although China's investment has been central to Rwanda's reconstruction, the government is seeking to become less reliant on the Chinese, which opens the door to further direct investment from the EU, which is currently the prime provider of foreign aid.

Corporate Background

Equatorial Mining and Exploration Plc was established in 2012 to pursue the exploration, development and trading of African industrial mineral assets aimed at power generation and economic development in Nigeria. Management's initial focus was on the large but overlooked reserves of coal, oil shale and bitumen. This strategy was pursued in an attempt to help to meet Nigeria's unsated demand for domestic fuel, power and road building materials – particularly supplying coal to domestic cement manufacturers. The company went onto gain control over 550km² of coal licences in the southern states.

In 2018, the company established a working relationship with ARG Minerals (Pty) Ltd which provides operational assets and expertise in Nigeria to exploit assets. The ARQ team set about identifying new opportunities to exploit coal assets in the country along with limestone, gypsum and specialist metals.

ARQ is the partner of EME's 100%-owned subsidiary EME Mine Nigeria Limited which manages the day to day running of the excavation and mining activities at the St Leonard Mine in Kogi State. The initial attempt to commercialise activities at the St Leonard coal assets was unsuccessful as the rains caused the overburden that had been removed to flood back into the pit. Presently, the company is reviewing new opportunities to exploit the asset, which remains under care and maintenance.

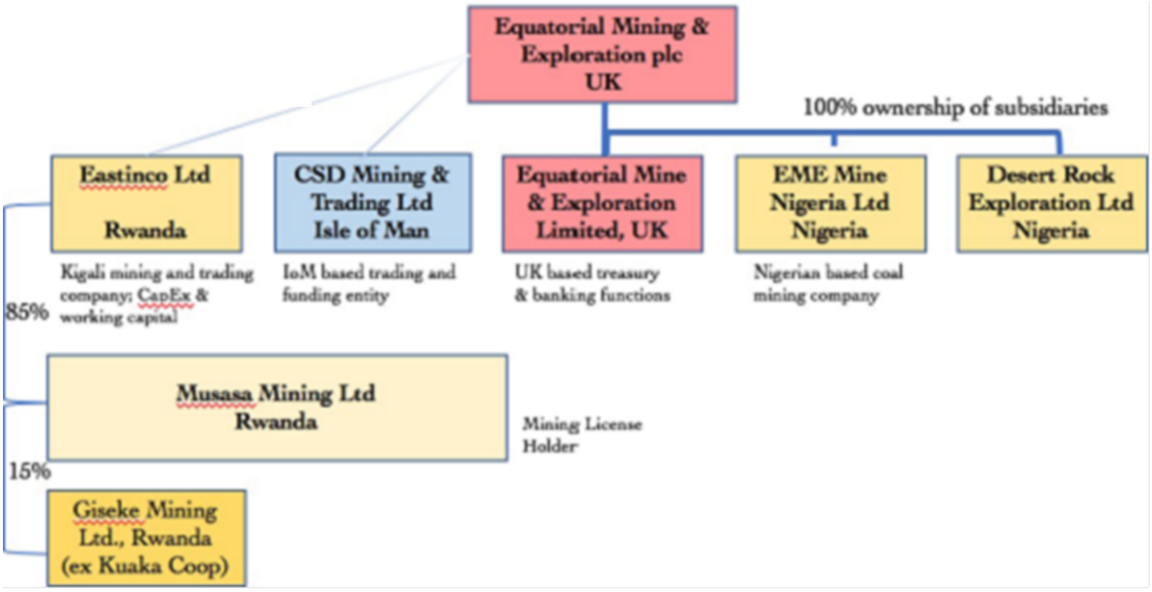
In December 2018, Charles Bray and Mike Staten joined the board. The plan was that these new Directors could use their network of investors and corporate contacts to gain access to both capital and new opportunities for the company.

On 3rd June 2019, the company announced that it had conditionally agreed to acquire Eastinco, a Rwandan mining, trading and exploration company. This acquisition would provide the opportunity to improve productivity and mechanisation of the mining operations. Eastinco has an exclusive contractual relationship providing the mining and subsequent coltan ore off-take agreement with a local Rwandan mining co-operative. The terms of the deal included the payment of an initial consideration of £900,000 which would be paid by way of a mixture of shares at 0.01p and Loan Notes. Plus, there would be a deferred consideration payable in Loan Notes based on the financial performance of Eastinco in the year ending 30th September 2020.

At the time this acquisition was announced, the company reported that it intended to raise £1.2 million in new shares and Loan Notes. The Loan Notes feature heavily as EME had limited headroom to issue shares until being granted the necessary authorities at a then forthcoming General Meeting. Also, it was announced that the founder Nicholas Nelson had agree to step down from the board, which demonstrates that EME was really entering a new era.

Operations

The company was established to explore and develop large overlooked coal reserves in Nigeria, but lack of success has led to a change of management. The new team at the helm has introduced a compelling strategy of taking EME into coltan mining in Rwanda which will be the prime focus moving ahead.



EME's new corporate structure. Source: Company

Rwanda

EME seems to be entering the Rwandan coltan industry with exquisite timing just as the country's government is in the midst of boosting long term investment in the country's tantalum industry. The company has a well-planned strategy to penetrate this market through the acquisition of Eastinco Limited, which is a Rwandan-based mining, trading and exploration company.

Eastinco represents a highly attractive acquisition as the business has already concluded an exclusive joint venture contractual relationship which provides for the mining and subsequent offtake of coltan ore with a local Rwandan mining co-operative.

Eastinco is a relatively new business that was established in February 2018 with the goal of conducting sustainable trading, mining and mineral development in the Rwandan mining sector. The principals saw an opportunity to leverage the gap that exists in the Rwandan market for professional mining and mineral trading services and activities.

Strategy

Mining in Rwanda is largely by artisanal and small-scale mining (ASM). The Eastinco joint venture agreements allows the company to provide capital to ASM operations while receiving no less than 85% of the net operating profits plus the right to purchase 100% of the coltan produced at favourable local market prices.

EME will modernise, mechanise and implement health and safety measures. In addition, the company will explore opportunities to expand the size of the mining operation at these joint venture sites as well as pursue its own mining opportunities.

EME is creating a Rwanda-focused tantalum mining and trading consolidation vehicle. There is a highly attractive opportunity in Rwanda to consolidate existing coltan mining operations. These small-scale mining operations are highly inefficient, but even so, using rudimentary manual methods these coltan mines have an established a recent history of production and are profitable.

Artisanal mining at present in Rwanda is not only inefficient, but also dangerous, with the local miners using picks and shovels in dangerous unsupported mining “holes” with little technology. These local miners have not been able to improve production methods or adopt more advanced technology due to financial constraints.

In 2018, the Eastinco team began searching for co-development opportunities where there was the chance to take over operational control of such existing proven operations. Many such mining sites have been identified and now the move has begun to negotiate with such co-operatives concerning the promise providing much needed working capital, health and safety expertise and mechanised equipment. Exclusive agreements are being pursued with co-operative owners which allow them to join in a new corporate entity and thereby the existing licence holders will enjoy royalty income on significantly increased production.

EME plans to invest relatively small amounts of capital on technology and equipment to upgrade the existing mining operations to become semi-mechanised, allowing production to be significantly increased, as well as introducing practices which help to create a much safer working environment.

There are big community benefits resulting from this strategy of upgrading and partially mechanising existing coltan operations. The longer-term future of the mine is secured for the community while improving returns for both the members of the co-operative and EME. Plus, there is the creation of intangible goodwill, which should provide a solid foundation for long term co-operation and growth in the country.

Kuaka Co-operative

Ahead of EME's acquisition, Eastinco had already signed an exclusive joint venture agreement with the Kuaka Co-operative. The Kuaka Co-operative mine site is located on the western shore of Lake Kivu, where it has a mining licence that covers 45 hectares.

Location of the Kuaka Co-operative mine site. Source: Company

In order to operate, EME must have the ownership of the land. The ownership of the whole 45 hectares is being transferred from the local owners in a number of phases for a mandated total cost of US$200,000. So, EME will be buying one area at a time which reduces upfront costs, with US$45,000 planned for land purchase costs in 2019/2020.

Kuaka Co-operative mine site. Source: Company

Renewal of the 15-year licence is expected by the government provided that the partners can demonstrate that investment has been made on equipment and that good workplace health and safety practices have been introduced. The Rwandan government is keen for the company to undertaken geological reconnaissance, surveys and mapping across the complete mining licence. Given the genocide that has happened in the country in recent decades, a lot of such knowledge has been lost and so the government wants to find out where the potential mineral assets are located. So, investors will have some form of Competent Person Reports (CPR) to look forward to which will help to really outline the scale of the favourable geology and economic potential.

Mining at the Kuaka Co-operative's licence area. Source: Company

The Kuaka Co-operative is already reasonably profitable with minimal capital expenditure, ahead of any tie-up with Eastinco. Unaudited results for Q4 2018 at the Kuaka Co-operative show average monthly profits of around US$76,000, which if achieved for a 12-month period would equate to annual profits of US$923,000.

Production	
Tantalum price per kg (pure)	US$168.00
Grade	42.0%
Production	5.275 tonnes
Revenue	
	US$
Revenue	372,204
Operating costs	(104,372)
Taxes	(12,225)
Expensed capex	(24,867)
Net Profit	230,839

Kuala Co-operative - Unaudited three-month financials to 31-12.18. Source: Company.

Coltan production at the Kuaka Co-operative seems to be well-established as there are substantial tailings which result from twenty years of washing the produced ore by hand. The tailings have been independently analysed at a grade of 25% Ta_2O_5 with an estimated in-situ value of US$7 million. It has been suggested that after processing, this material would be ready for sale.

Upgrading ASM coltan operations

In order to increase productivity of the Guaka co-operative mine to the targeted level of 7t per month, EME is expecting to invest a total of US$500,000, with wash plant equipment making up half of that figure. The co-operative will be moving from picks and shovels to becoming mechanised and the additional equipment being supplied is likely to consist of a JS305 excavator, a 3DX backhoe and a 455ZX loader, all manufactured by JCB.

JCB JS305 excavator and JCB 455ZX loader. Source: JCB

In addition, a Caterpillar D6 track-type tractor/medium-sized bulldozer and trucks will be supplied. Similar sorts of equipment are intended to be used at the new joint venture projects as they come on stream, as well as at the company's 100%-owned projects.

JCB 3DX excavator. Source: JCB

Caterpillar D6 bulldozer. Source: Caterpillar

KPIs

The management team will be keeping a watchful eye on four key performance indicators (KPIs) in order to drive the business. Firstly, production target tonnes per month. Secondly, the price and the spread between the local US$ price vs international price. Thirdly, quality control in making sure that the Ta2O5 grade remains in excess of 30%. Lastly, ensuring that operating costs represent less than 35% of the value of production.

Supply verification

Coltan mining has courted controversy as it has helped to finance the conflict in the DRC. The company is committed to ensuring that all delivered mineral assets can be sourced to the mine site and are intent on engaging with supply verification companies to ensure compliance.

All mineral exports from Rwanda are traceable through the tagging system which is currently accepted by the downstream buyers of the minerals. EME's chosen partner for supply verification looks as though it will be the Better Sourcing Program which is an independent, private company offering due diligence and traceability assurance programs, which has been in operation since 2014.

Better Sourcing is a Responsible Minerals Initiative (RMI) recognised upstream assurance mechanism that validates supply chains and exports through the digital and continuous collection, verification, and reporting of data on production, trade, and socio-economic conditions from source to market. The business operates in both the DRC and Rwanda and has a good reputation for its transparent approach to conflict-free and responsible procurement of tin, tantalum, tungsten ores and gold (known as 3TG) from artisanal, small scale, and semi-mechanised mining operations.

Further opportunities

Eastinco continues to negotiate offtake agreements and opportunities to co-develop or exclusively develop assets in Rwanda and is in advanced negotiations with two additional mining ventures on similar terms.

Increasingly, minerals are becoming an important source of revenue for Rwanda, and the government see the mining industry as an important conduit for increased growth and economic transformation. The goal seems to be to improve productivity in the sector with campaigns running across the country encouraging the adoption of professional mining practices, along with efforts to restrict illegal mining practices.

Local miners like the Kuaka Co-operative are faced with the problem of losing licences in 2020 unless they can demonstrate compliance with the terms of their mining agreements. So, the stage is set for EME to take over control of such mining operations, mechanise them and save these locals losing their mining licence. Certainly, there is expected to be the potential with mechanisation to turn existing artisanal mines into far more efficient open pit surface mines.

EME's strategy calls for investing in joint venture deals, expanding production and then taking advantage of other such opportunities. At the moment, they can pick and choose but this situation is unlikely to last too long. In addition, the company's Rwandan-based management had also identified two sites where the licences were available from the government, which would provide EME with 100%-owned mining operations.

At the same time, EME/Eastinco's activities will also be encompassing trading. The Kuaka Co-operative mining licence will allow them to trade coltan locally where there is the potential to buy material at US$140 per kilo and combine with their own production and sell internationally for US$165/kg. It is planned that this activity will be funded by trade finance, possibly covering 85% of US$165/kg provided that the material is insured, secure and verified.

Nigeria

The company controls coal licences in the southern state of Nigeria which includes the St Leonard Mine in Kogi State. In 2018, the company established a working relationship with ARG Minerals (Pty) Ltd which provides operational assets and expertise in Nigeria to exploit the assets.

ARQ is the partner of EME's 100%-owned subsidiary EME Mine Nigeria Limited which manages the day to day running of the excavation and mining activities at the St Leonard Mine in Kogi State. ARC got the mine up and running and delivered coal as there was a deal in place with offtake partners. However, rains caused the overburden that had been removed to flood back into the mine.

As the initial attempt to commercialise the activities at the St Leonard coal assets was unsuccessful, currently the company is reviewing new opportunities to exploit the asset.

Strategy for growth

EME is emerging from a fairly lacklustre past with a really compelling growth strategy which is focused on mining and supply of tantalum where there is clearly rapidly growing demand from a host of technology sectors. Following a well-overdue boardroom clear out, the big changes have been driven by a brand-new management team which looks to have the expertise and connections, together will being well-incentivised to a complete a wholesale turnaround in the fortunes of the company for the benefit of all shareholders.

Following the acquisition, Eastinco lies at the heart of the company. This business has successfully established and is working hard to maintain a strong local industry presence in coltan in Rwanda. The principals have developed an impressive network of traders, miners and officials on the ground in the country which allows them to tap into a terrific knowledge base of the industry, as well as be kept up to date with business opportunities across the wider sector. Eastinco's founders have wide-ranging experience and expertise in mining and commodity trading in Africa. Skills that are now being used to make the most of the opportunity that exists in the Rwandan coltan industry today.

Moving forward, the timetable looks something like this. It is expected that the spending on capital equipment at Kuaka will be completed in August 2019, which will allow the new equipment to be installed, tested and become operational. October 2019 sees the start of the 12-month performance period, which is used to determine the final instalment of the payment for the acquisition, which is capped at £8.1 million.

Management believe that providing US$500,000 of capital expenditure at Kuaka is sufficient to increase production 5-fold. This is not hard to envisage because currently the ore is washed manually. Even given the lack of mechanisation at present, the co-operative has been able to report approximately US$125,000 revenue and net profits of US$75,000 per month on average for Q4 2018. A five-fold increase in production would see quarterly production rise from 5t to 25t, equating to annual production of around 100t. Given the improved recovery that the new equipment would bring, bottom-line profits are likely to be substantially higher than a simple five-fold increase to net profit levels currently being achieved.

Under the terms of the Kuaka joint venture agreement, EME, as now the 85% owner in Musasa Mining Ltd, which holds the mining licence, will receive an 85% share of the profits as well as being able to buy 100% of the produced coltan at attractive local rates. Currently, the tantalum content of the concentrate is attracting a price of US$145/kg (100% Ta). The vendors will retain a 15% stake in this now more productive and profitable operation which will provide them with a decent level of income and without the responsibility for managing the mine. The local owners have little choice but to bring in a partner as unless the mine is mechanised and health and safety standards improved, they will lose their mining licence in 2020. Moving ahead, the success of the joint venture with the Kuaka Co-operative will provide an important test case to demonstrate that EME/Eastinco can operate successfully in the country and whether on the ground the business can gain the respect of being a trusted partner.

The Eastinco principals really understand how business gets done in Rwanda and are cutting no corners in in pursuing a growth strategy. Both EME and Eastinco are committed to the health and the well-being of local miners and not just paying lip service to the matter. The company is setting about investing in the improvement of mining safety systems, logistics and capital resources which will allow the workplaces and productivity to be improved. The team is seeking to create intangible goodwill, which bodes well for long term co-operation. This facet could be the vital element towards being provided with the opportunities moving ahead that allow for the reasonably rapid but controlled growth that has been planned.

As one of the largest sources of tantalum in the world, the market in Rwanda provides EME with the opportunity to buy tantalum concentrate from lots of other artisanal mining companies. This roughly 25-45% pure tantalum concentrate can then be shipped out 24t at a time by container to international buyers such as Apple which are paying around US$165/kg. EME's is able to trade in Ta concentrate locally in Rwanda through its 85%-owned Musasa Mining, which holds the mining licence. Plans are well developed to use trade finance which will cover 85% of the US$165/kg selling price as long as the concentrate is insured, secured and verified. Being able to access trade finance will allow the company to make the best of this price differential, whilst allowing for more efficient capital utilisation.

The Kuaka co-operative joint venture agreement will serve as a blue-print for further deals. Moving on to use of trade finance will allow for lower acquisition cost of ASM coltans from local third parties. We know that discussions with other co-operatives have been in progress for some time now and so it is quite conceivable that EME may be able announce the closing of a second co-operative joint venture over the coming months. In all essence, the company is acting as a consolidation vehicle in coltan production and trading in Rwanda. As further joint venture agreements are successfully concluded, so there will be all the obvious benefits that come with merging, acquiring or combining operations, which will allow costs to be reduced and profit margins to improve. Such consolidation plays have a history of being well received by investors.

However, the company has set its sights a little higher than this as the Eastinco acquisition gave EME access to Eastinco's own mining licences, which provide the prospect of developing independent mining operations in the future which could serve to significantly improve profitability in the medium term. The first 100%-owned mine is likely to be of a similar scale to Kuaka but the team seems to have their sights set on bigger prizes that are available.

Larger scale coltan projects could be financed in the traditional way that international mining ventures are funded, such as project finance and/or offtake agreements etc. Obviously, such a development could provide an improved level of profitability compared to joint ventures, but it is only likely to be achieved on the back of the demonstrable success of the coltan mining and trading consolidation strategy which will serve to help provide the company's share of the required investment capital.

The board is looking for EME to become strongly cash flow generative and a progressive dividend payer. Once there is clear evidence that reasonable amounts of cash are being generated, the plan is to move from the NEX market to gain a standard listing on the London Stock Exchange. Also planned is a share consolidation. Such moves are likely to lead to an increased profile, a dramatic increase in liquidity of the stock and an enhanced valuation as the company could then begin to attract the attention of a much larger investment audience. Looking ahead, EME could well become an attractive corporate target as the business in Rwanda grows. At the moment that is all for the future as over the coming months it will be vital that the company can demonstrate it can achieve important milestones on the way to creating a creditable and sustainable business to create investor confidence.

Financials & current trading

EME's results over the last few years mainly show the cost of administration, share-based payments and financing as the Nigerian coal interest were moved into production.

12 months ending 30 December £ '000s	**2014**	**2015**	**2016**	**2017**	**2018**
Revenue	-	-	-	-	-
Pre-tax profit (loss)	(1,032)	(811)	(1,552)	(309)	(221)
Net profit/(loss)	(1,032)	(811)	(1,552)	(309)	(221)

EME's five-year trading history. Source: Company accounts

2018 results

During the twelve months ended 31st December 2018, an agreement was announced (17th July 2018) with ARQ Minerals, a South African coal mining company. This move was followed by good progress at the company's St Leonard coal mine in Kogi State, which resulted in early production and the start of a small-scale supply contract with the local cement industry. However, very heavy rain in December 2018 made short term progress impossible and the decision was made to cease activity, conserve funds and look in depth at an alternative opportunity which involved a mining project in Rwanda.

Before the year-end, Charles Bray and Mike Staten were appointed directors to properly analysis the Rwandan Project, which offered a far better return for shareholders than continuing operations in Nigeria.

Financial results for the period showed that the company incurred an operating loss of £0.232 million and a loss for the year before and after tax of £0.221 million, which equated to a loss of 0.003p per share.

Recent developments

Comprehensive details of the transformation at EME were contained in the circular sent to shareholders which followed the announcement of 3rd June 2019. As part of the proposed transaction, the fundraising was designed not only to provide sufficient capital for the company to develop its acquisition of Eastinco, but to also fund the development of this business. The final consideration for Eastinco is to be determined at six times the net profit of the business over the calculation period (October-September 2020) less the initial consideration, subject to a £9 million cap on total considerations. It seems that the vendors will receive callable non-convertible Loan Notes with an 8-year maturity and an 8% coupon.

On 1st July 2019, the company was able to announce that binding commitments had been received totalling £1.304 million for the fundraising which comprisied of a placing of 4,000,000,000 new ordinary shares at a price of 0.01p per share and the issue of £904,000 new Convertible Loan Notes. The investors participating in this fundraising were issued with warrants on a 1-for-1 basis to subscribe for one additional Ordinary Share on or before 30 September 2020 at a price of 0.015p.

On 29th July 2019, the shares recommenced trading on NEX, following the publication of the 2018 Report and Accounts. At the General Meeting held on this day, all the resolutions were duly passed. This meant that all the new Convertible Loan Notes were mandatorily converted into new ordinary shares at a conversion price of 0.01p per share.

Also, on the 29th July 2019, the company announced an amendment to the Share Purchase Agreement, a new joint venture mining opportunity and completion of the Convertible Loan Note Issuance. Apparently, there is a technical delay in the transfer of certain mining licenses required as a condition to completion of the share purchase agreement in respect of the acquisition of Eastinco. As it is thought unlikely that the transaction will be completed by the long stop date of 31st July 2019, this has been changed to 30th September 2019.

On the new joint venture mining opportunity. Eastinco has begun preliminary discussions on a new such an opportunity in southern Rwanda, which presents the opportunity to grow the business substantially. At this stage, such a deal is subject to successful geological survey results and the negotiation of satisfactory terms and conditions.

Risks

Geological risks

There are a series of risk factors concerning the amount of understanding of the geology of the project areas, the mineralisation being targeted and the distribution and grade of coltan to be mined at various projects I Rwanda.

Political risk

There are political risks involved in companies operating in Rwanda.

Metal price risks

The price of tantalum has traded between US$600,000/t and US$100,000/t since 2000 and so the company has metal price risks to deal with, affected by the supply and demand for tantalum. However, EME's strategy is to enter into trading arrangements only after securing both sides of the transaction, which would allow this risk to be strictly limited.

Exchange rate risks

The company's accounts are reported in sterling with coltan/tantalum being priced in US dollars and local costs in Rwandan francs. Fluctuations in the value of the pound against US dollar and the Rwandan franc may well have an effect on the valuation that EME is awarded by the UK stock market.

Future funds

The market for raising funds for small cap resources companies steadily worsened over the course of 2018/19. Some recent fund raising in the resources sector have seen share prices being undermined by incoming investors demanding substantial discounts to provide the necessary capital.

Executive Management

Daniel Hogan – Eastinco CEO

Daniel has substantial regional experience in mining following the 1996 acquisition of AB Granite Mine in Zimbabwe which was focused on silver and granite mining. Subsequently, he co-founded a European equity investment company with strong Middle Eastern investor ties. Daniel is also the co-founder of the first African craft distillery in eastern Africa, 1000 Hills. He is a full-time resident in Rwanda and has a 30% holding in Eastinco.

Stephan Knoef – Eastinco COO

Stephan also considerable regional experience as an entrepreneur and commodity traders since 1985, beginning as Country Director in Mozambique. He ran and operated multiple successful businesses in the region. Previously, Stephan acquired a 50,000-hectare timber concession thereby gaining invaluable experience as a commodity trader and exporter. He moved to Rwanda as a full-time resident in 2009 and has a 30% holding in Eastinco.

Charles Bray – EME Chairman & CEO

Charles has plenty of experience primarily in investment management, capital markets and financial structuring for small and mid-sized companies. He has more than 18 years' experience as Chief Executive of a UK based investment management company. Charles has raised in excess of US$1 billion of capital via multiple investments structures including equity and equity linked debt issues. He is a full-time resident in the UK. Charles has excused himself from any voting or negotiation relating to the transaction given his relationship with both companies. He has a 40% holding in Eastinco.

Mike Staten – EME CIO

Mike is an ex-professional athlete, with extensive experience of the UK small cap market. He is the former Head of Trading for a leading UK small cap financial fund specialising in bespoke finance having deployed more than £200 million in the last three years. Mike has gained in-depth experience in investment management having worked extensively with Charles Bray. His expertise lies in trading and brokerage and a detailed understanding of UK markets and extensive contact base amongst HNW and institutional investors.

Board

Charles Bray – Chairman & CEO

See previous page

Mike Staten – CIO

See previous page

Simon Retter ACA – Non-Executive Director

Simon has extensive experience in public markets specialising in reverse take overs, IPO's and secondary fund raisings as well as financial controls and corporate governance. His career began at Deloitte and Touche LLP where he qualified as a Chartered Accountant with his work focusing on the natural resources and energy sectors. Simon currently holds the position of CFO of Horizonte Minerals plc an AIM and TSX quoted company which is developing two tier-one nickel projects in Brazil, as well as Non-Executive Director of Vertu Capital Ltd and HRC World plc which holds the Hard Rock Café franchise for The Peoples Republic of China. Simon joined the board of Equatorial Mining in June 2015.

Devon Marais – Non-Executive director

Devon is a South African national with directorate positions in five companies spanning a range of business segments. Of most relevance was his appointment last year as a non-board Director of ARQ Minerals Pty Limited which took an interest in the company in June 2018 becoming a shareholder and operating partner in Nigeria.

Forecasts

We initiate coverage of EME with forecasts for the years ending 31st December 2019 and 2020, which covers the period when the company begins mining coltan in Rwanda after the disappointment of the Nigerian coal venture.

For 2019 we have assumed that coltan production begins over the coming months at the first joint venture deal with the Kuaka co-operative which is expected to be ramped up to 7t per month before the year end. First sales of coltan are expected in late 2019 resulting in a revenue of £1.187 million, which after cost of sales and administration, general and operational expenses is expected to provide an operating loss of £0.588 million. A pre-tax loss of £0.658 million has been determined, on which it is assumed no tax will be payable. The increase in the number of shares following the financing results in the creation of over 21 billion shares and results in the loss per share of 0.0033p.

In 2020, following management's plans, we have assumed that the second joint venture agreement is signed allowing the commencement of additional coltan production rising to a monthly rate of 7t, a project where EME has an 85% interest. Later on in the year, it has also been assumed that production begins at the company's own 100% owned project where production is targeted at a higher monthly rate of 8t. Coltan sales are expected to provide a healthy increase in revenue to £9.188 million and a gross profit of £3.681 million. After administration, interest and depreciation, we have forecast a pre-tax profit of £1.862 million and £1.766 million after tax, which equates to earnings per share of 0.0045p.

Year End 31 December (£'000s)	**FY2017a**	**FY 2018a**	**FY 2019e**	**FY 2020e**
Revenue	-	-	1,187	9,188
Cost of sales	-	-	(627)	(5,507)
Gross profit/(loss)	-	-	559	3,681
Administration and operational expenses	(271)	(140)	(1,148)	(1,311)
Provision against loan advanced to related party	(36)	(90)	-	-
Project origination costs	(2)	-	-	-
Provision for impairment of investment	-	(2)	-	-
Operating profit/(loss)	(309)	(232)	(588)	2,370
Interest and similar charges	-	11	(21)	(439)
Depreciation	-	-	(49)	(68)
Profit/(loss) on ordinary activities before tax	(309)	(221)	(658)	1,862
Taxation	-		-	(97)
Profit/(loss) on ordinary activities after tax	(309)	(221)	(658)	1,766
Basic and diluted loss per share (pence)	(0.005)	(0.003)	(0.0033)	0.0045
Weighted average number of shares	6,062,772,493	8,758,247,619	19,920,602,932	38,854,986,493
Total shares plus options and warrants	7,898,941,670	13,392,2459,507	53,684,849,507	53,684,849,507

Source: Company/Align Research

Valuation

EME is well-placed to successfully develop as a consolidation vehicle to acquire and upgrade artisanal coltan mines in Rwanda. Management believes that there is a good opportunity to gain necessary scale here as EME is relatively early into the country. Importantly, it does seem that the company enjoys a good relationship with the government. On the ground in the country, EME's behavior at the site of the first joint venture at Kuaka seems to have been exemplary. Even ahead of any joint venture mining operations beginning, the company has already installed a new water pipe for the village. This move has been much appreciated by the villagers and suggested that there is tremendous goodwill within the local community, which will be of great benefit in establishing a growing operational footprint in Rwanda.

With the change in the mining law, artisanal miners face losing their licences unless they can finance quite wide-ranging improvements. There is little finance available locally and so EME is being inundated with offers. This means that there is a chance to do some good deals as the artisans are attempting to save their jobs and protect their livelihoods. Sensibly, management have adopted a more measured approach on the initial projects and are initially seeking out the low hanging fruit**. The board believes that they could grow the coltan business to a level of several hundreds of tonnes per quarter.**

To value the company at this stage we have developed a financial model which is based on the production information and economics of the Kaka mine (pre-investment), the company's financial budget and a number of discussions with the management team. Below we list some of the key assumptions.

Scale - We see the Kuaka joint venture as representing a blue-print for further joint venture deals as well as the initial 100%-owned projects. We have assumed EME's total production over a five-year period climbs to around 200t per quarter. This we have assumed is achieved by operating five joint venture mines and three 100%-owned projects. The Kuaka joint venture is expected to go into production over the coming months with an investment of US$500,000 in capital equipment. We have chosen to model the performance of EME's coltan business initially over the period running from 2019 to 2029.

Eastinco acquisition price – The purchase price for the acquisition of Eastinco was a maximum of £9 million. The initial consideration was £0.9 million with the final consideration dependent on the performance of Eastinco over a 12-month period beginning at the start of October 2019. The final consideration equals six times net profits over this period. Our analysis of this initial period suggests a net profit of US$1.2 million is generated which would result in a final consideration of US$7.20 million (£5.67 million). This is intended to be paid in a Loan Note with an 8% coupon. Such is the cash flow generation of the projects that we have assumed that the coupon is paid as it falls due and not rolled up and paid later. Hitting targets, would allow these Loan Notes to be bought back as quickly as possible, but the vendors do not want to disrupt the business over management debt. With this in mind, in our analysis we have assumed that the Loan Notes are bought back evenly over the period 2020 – 25, which we consider quite feasible and achievable without hitting growth.

Joint venture deals – At Kuaka, the joint venture deal is 85%-15% in the company's favour with EME able to buy the production at an attractive local price of US$140,000/t. We have assumed that further joint venture deals are agreed on a similar basis.

Timing - The board is trying to keep to the schedule of signing a second joint venture before the year-end and this second operation could begin as early as March 2020. This project also needs US$500,000 of capital expenditure and so the timing really depends on when enough cash has been generated by the first joint venture, which will be providing the funding. The management team are proven operators and under no illusions that matters will be easy. They are used to resolving the problems inherent in operating in African countries and expect that each and every site will have its own issues.

Reserves – At the moment there is no CPR. At Kuaka, the Ministry of Mines wants EME to complete a geological survey to update their records. Geological reconnaissance on behalf of Eastinco included drilling a couple of holes and looking at results from other drill holes which convinced them that this co-op was on a good location and was a richer mine with deeper potential and a 20-year life. So, the focus has been projects with a high grade of Ta2O5 and mine sites that have many years of possible production. Joint ventures have the benefit of coming with local knowledge as the geology has been exposed by artisanal mining. In reality, it is possible to look at the production to date at these joint venture projects as a giant bulk sample which will give good comfort over the true grade of the mineralisation.

Grade – Our analysis has been based on a flat grade of 32.5% of Ta2O5 in coltan being mined at all the joint venture projects as well as the company's 100%-owned mines. This may well be quite conservative as at Kuaka a grade of 39.5% Ta2O5 is being mined.

Production capacity - Targeted monthly production at the joint venture projects is 7t, with slightly higher production expected at the 100%-owned EME mines at 8t/month.

Capex – It is assumed that each site will require an investment of US$500,000, with wash plant equipment making up half of that figure. A similar capital investment is expected at each of these operations, with a similar tally of machinery. Although, once there are two joint ventures up and running the earth moving equipment might become freed up to be used on further projects once various development work including sufficient stripping has been completed. However, we have approached the matter of capital equipment from a fairly conservative stance.

Selling price – The local price to sell and buy and coltan has been assumed to be US$140/kg or US$140,000/t, where the price is based on the 100% pure tantalum content.

Operating costs - Mine operating expenses have been assumed to be 35% of the sales price. There might be some seasonality, but management is targeting at getting operating costs in to the 20-30% range and even harbour ambitions to take costs even lower. Plus, the cost of local storage and transport is assumed to be US$60/t.

Taxes – There is a 4% tax plus a local district tax of US$100/t and Rwanda tax of 17.5%.

Royalty – On 100%-owned mining projects it has been assumed that a 10% royalty will be payable.

Tantalum trading - EME is also seeking to become involved in trading tantalum concentrate and making additional revenue from the price differential that exists between that in the local market in Rwanda (US$140,000/t) and international prices (US$165,000/t). EME will be looking to fill containers with 25t loads with the production coming initially from Guaka, to be supplemented by buying in additional production from other local co-ops at US$140,000/t.

Trade finance – Rather than tie up its own funds, the company is seeking to use trade finance which looks like it will cover 85% of the value of each and every container's worth of coltan. The trade finance deal which they expect to negotiate will allow EME to borrow 85% of the sale price (i.e. US$165,000/t) for six months, which means that the company is effectively 100% financing the purchase price. We have assumed that this finance costs 16% per annum and will be necessary for a 10-week period on average for each and every load. This is provided that EME has a good name buyer. So, it will be critical to ensure that offtake agreements are made with a strong counterparty, which would also serve to help lower the interest rate paid on such finance.

Our financial model based on the above mentioned assumptions was used to determine a pre-tax Net Present Value for this project at discount rates of 10% and 12%. In order to be conservative, we selected to use the NPV(12) figure of US$53.49 million (£43.84 million).

Discount rate	**10%**	**12%**
NPV US$ million	61.38	53.49
NPV £ million	50.31	43.84

Net Present Value for the Rwandan coltan business. Source: Align Research

The company has provided good guidance in outlining the scale of the opportunity as well as a detailed breakdown of capital expenditure and operating costs. Currently there has been less analysis than we might like to see on the reserves and grade, but in the main these are established small scale operations which are already in operation with grade and likely scale of mineralisation know to a certain extent. Plus, there is the promise of some geological studies in the CPR. In light of this, we have chosen to further de-risk the valuation to derive a figure which we believe is highly conservative and indeed credible in today's market. Using a 12% discount rate already de-risks the valuation but the project has been further de-risked to the tune of 50%, by just taking 50% of this NPV(12) valuation or £21.92 million through to our SOTP calculation.

Sum-of-the-parts valuation

	Valuation £ million
Rwandan coltan business (risked)	21.92
Cash	1.30
Debt	(0.30)
Total	**£22.92m**
Per share (15,259,849,507)	**0.150p**
Fully diluted basis	
Proceeds from the conversion of warrants (14,700,000,000 exercisable at 0.015p)	£2.21m
Total	**£25.13m**
On a fully diluted basis (53,684,849,50)	**0.0468p**

Source: Align Research

Our net valuation for the company is £22.11 million, which equates to 0.150p based on the current number of shares in issue (15,259,849,507). It should be pointed out that following the financing there are 14,700,000,000 warrants exercisable at 0.015p outstanding, if exercised, these would bring in a total of £2.21 million which would take our SOTP valuation to £25.13 million when deriving a valuation figure on a fully diluted basis (53,684,849,507 shares) which comes out at 0.0468p. This target price might not look much like an uplift in value for the stock which has returned from suspension trading at 0.02p – 0.06p. However, the new shares bought by investors at 0.01p per share in the fundraising have only just been issued and the bid price has yet to be tested.

At the moment, EME is all about getting the right crew together to successfully roll out the concept. The team is in advanced discussions with two more co-ops and the real driver here is the grade of Ta2O5. It is thought that both these co-ops are mining fairly rich ore and that there is sufficient coltan ore to work for 5-10 years at these sites. With that in mind, over the coming months, investors can expect a healthy newsflow. The board also intends to provide regularly quarterly operational reports which will highlight the parameters which determine profitability, such as production and grade as well as tantalum sales both locally and internationally. This is where the Kilgari-based team will be focusing their attention together with crucially getting the operating costs down to sub 30% of the coltan sales price.

There are some bigger prizes in Rwanda, which could potentially provide a quantum leap in profitability. The government has asked EME to consider operating a greenfield site and in the first year they will look at drilling of that area. This would represent a whole new avenue as the board's philosophy early on has been to minimise risk as much as possible, which joint ventures neatly allow. A local wealthy landowner has some 10,000 hectares where substantial exploration work has already been undertaken and apparently this area contains a lot of tantalum and the site is incredibly rich. Greenfields are different and will need a bigger budget to accommodate delineating coltan deposits and so the management plan to bring in an independent driller.

Conclusion

Through the acquisition of Eastinco, EME has come of age and is now a compelling out and out growth vehicle focused on tantalum production and trading in central Africa. Tantalum is a critical component allowing big name electronics manufacturers to pack extremely high capacitance into small volume, which is unavoidable in order to shrink the size of electronic devices to meet the increasing demands of consumers. The move to a share consolidation and a main board listing on the LSE will simply serve to widen the net for potential investors.

We look forward to being given the opportunity to revise our valuation as a number of the uncertainties become better understood over the next 12 months following the greater knowledge that is gained from embarking on two joint ventures, geological studies, the beginning of tantalum trading activities and information that becomes available in the run up to the establishment of the company's first 100%-owned mine. **We initiate our coverage of EME with a Conviction Buy stance and a target price of 0.0468p.**

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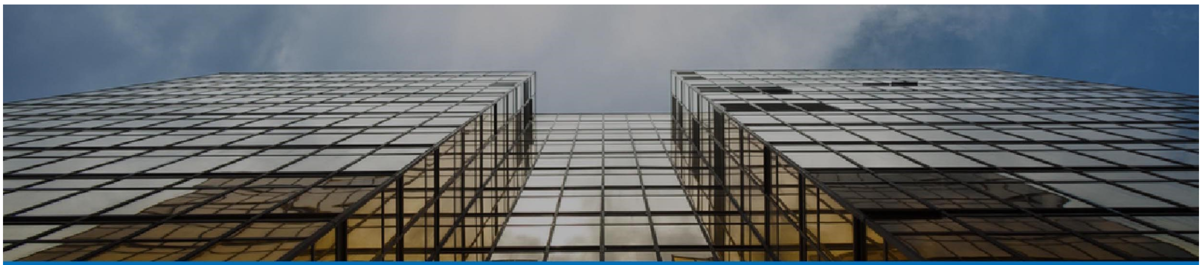

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