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**BlackEarth**  
Minerals NL

## BlackEarth Minerals: An Emerging Graphite Junior.

Following incorporation in 2016 BlackEarth have wasted no time in accumulating highly prospective ground in Madagascar. The Maniry and Ianapera Projects sit adjacent to the Madagascan giant which is nearing production: the Molo Graphite Project, whose phased approach to production maintains a competitive initial Capitaloutlay while maintaining a CIF cash cost sub US\$700/t.

Much like the Molo Deposit BlackEarth's properties have shown through recent historical exploration to also hold high grade coarse flakes of graphite. With mineralisation occurring near surface and weathered the lessons learnt at Molo appear all the more relevant.

Post an ASX IPO BlackEarth are poised to embark on an aggressive twelve month work programme to move the company from not only an exploration play but to one that has sound economics in the form of a Scoping study. Based on the current global graphite players such a move is rewarded with a mean multiple of three.

While there are many challenges ahead the company has assembled a capable and willing management team to drive the company forward over what should be an interesting 2018.



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**11/9/2017**

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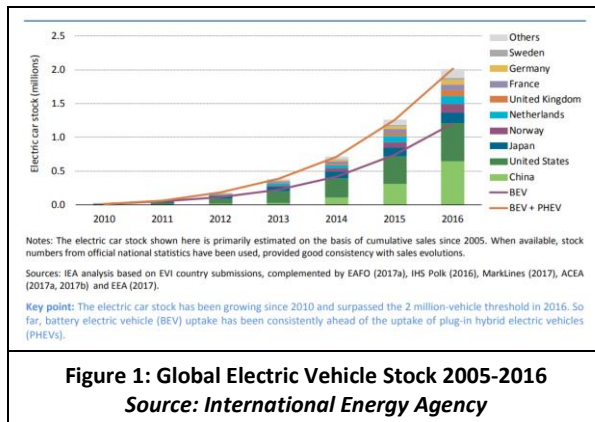
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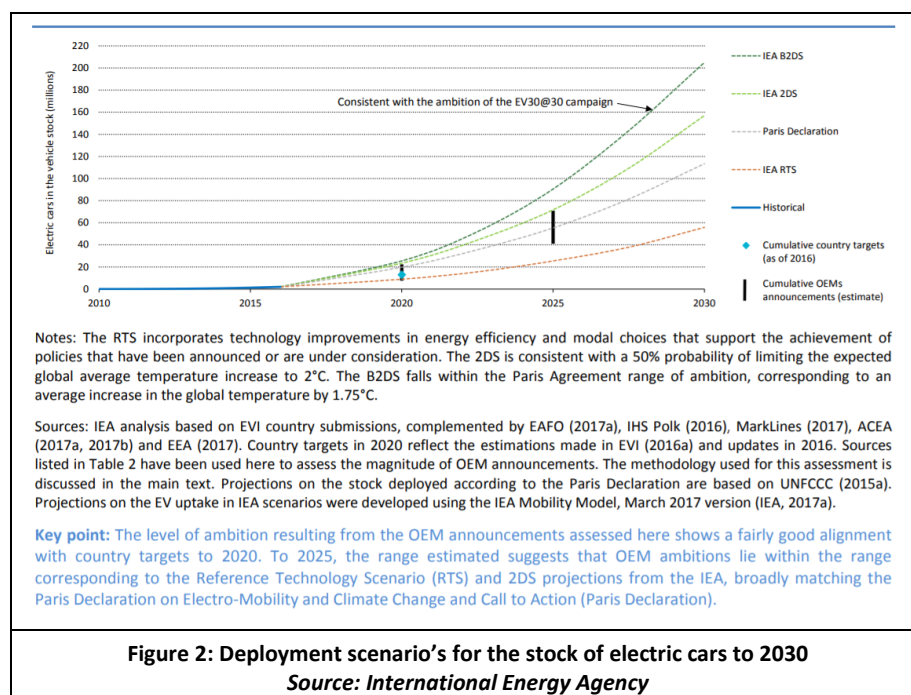


## BACKGROUND & FACTORS AFFECTING DEMAND:



which has seen the number of EV's in use now surpassing the two million mark Figure 1, an increasing number and amount of critical high tech minerals are going to be required. Over the same six-year period interest in minerals such as lithium, cobalt, nickel sulphides and indeed graphite has seen a plethora of junior miners emerge and stock market values rise accordingly.

However, the need for a cleaner more responsible energy for the end user is now causing the mid to downstream (manufacturers, consumer etc.) market to turn the spotlight back on the upstream providers (the suppliers, miners etc.). **Responsible sourcing** of materials from trusted suppliers that operate in a legal and responsible manner but themselves offer a cleaner and more sustainable manner of exploitation is becoming common rhetoric. The current value chain is broken with critical metals coming from irresponsible and environmentally damaging incumbent miners most notably within the Chinese market.





Under Xi Jinping's drive towards sustainability and the new environmental regulations, China is now seeing a number of graphite producers and manufacturers being forced to close with **estimates of production dropping by as much as 30% in the Chinese market**, leaving companies seeking off shore investments to gain security over supply, while the growing number of giga factories around the world leaves no shortage of buyers for these critical metals.

BlackEarth Minerals NL are beginning their journey with flagship assets in the favourable mining jurisdictions of Madagascar and their backyard of Western Australia with the former positioned to rapidly advance onto the global scene. While there are many decision points that are required as they look to advance these projects both in terms of their technical and economic understanding the ground work is in place to rapidly advance. The typical path is laid out in Figure 3.

East African countries known to have several advanced stage Graphite projects includes; Tanzania, Mozambique, Malawi and notably Madagascar. With Madagascar as the only country in this region with a long history of graphite production.

Mammoth projects such as the Balama and Nicanda Hill projects in Mozambique, Namangale in Tanzania and in Madagascar the

Gallois and Molo projects dominate in terms of size (Figure 4), whereas in recent years reduced size projects such as in Tanzania have exploded into life with Kibaran Resource quickly reaching a BFS on their Epanko project while Walkabout Resources and Blackrock Mining in Tanzania and Battery Minerals in Mozambique have kept pace. However, after this year's regulatory uncertainty in Tanzania which is still unfolding has seen perceived sovereign risk towards Tanzania grow substantially resulting in a shift in attention towards lower risk and proven Graphite producing countries such as Madagascar.

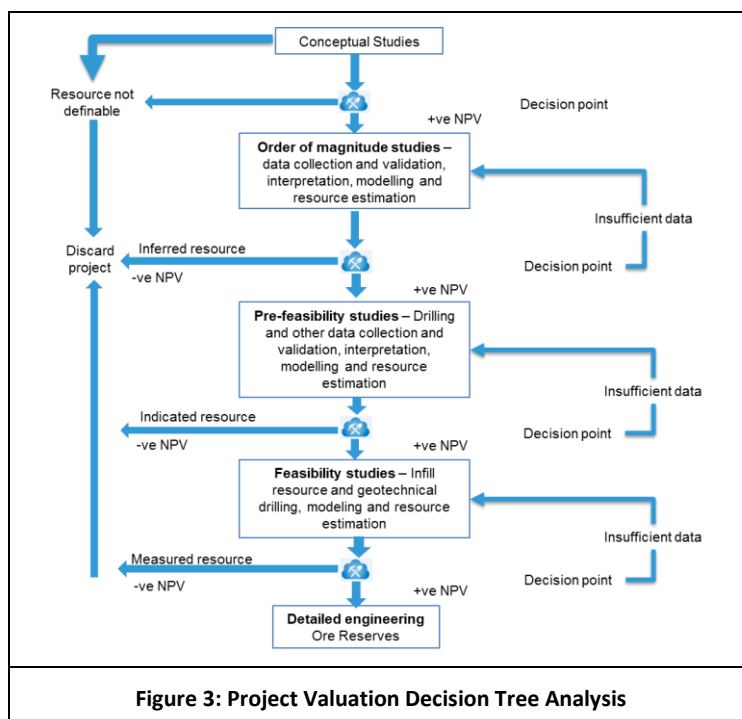
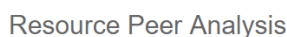


Figure 3: Project Valuation Decision Tree Analysis



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| Project Name | Total Ores (t) | Total Grade (%) |
|--------------|----------------|-----------------|
| Lindi        | 29.6Mt         | 11%             |
| Montepuez    | 61.6Mt         | 10.3%           |
| Epanko       | 30.7Mt         | 9.92%           |
| Mahenge      | 203Mt          | 7.83%           |
| Molo         | 141Mt          | 6.13%           |
| Namangale    | 462Mt          | 4.93%           |
| Nachu        | 163Mt          | 4.91%           |
| Cobra Plain  | 206Mt          | 2.6%            |
| Duwi         | 85.9Mt         | 0.654%          |
| Nicanda Hill | 1460Mt         | 10.7%           |
| Balama       | 1840Mt         | 3.14%           |

Project Title:  (This filter will not refresh the graph)

Add Projects

Save Selected Projects

Commodity:

☒ Graphite

Country:

✖

Madagascar

✖

Tanzania, United Republic of

✖

Mozambique

✖

Malawi

Total Ores (Mt):

From:

To:

Total Grade:

From:

To:

**Figure 4: Graphite Deposits Located in Eastern Africa**

## MADAGASCAR



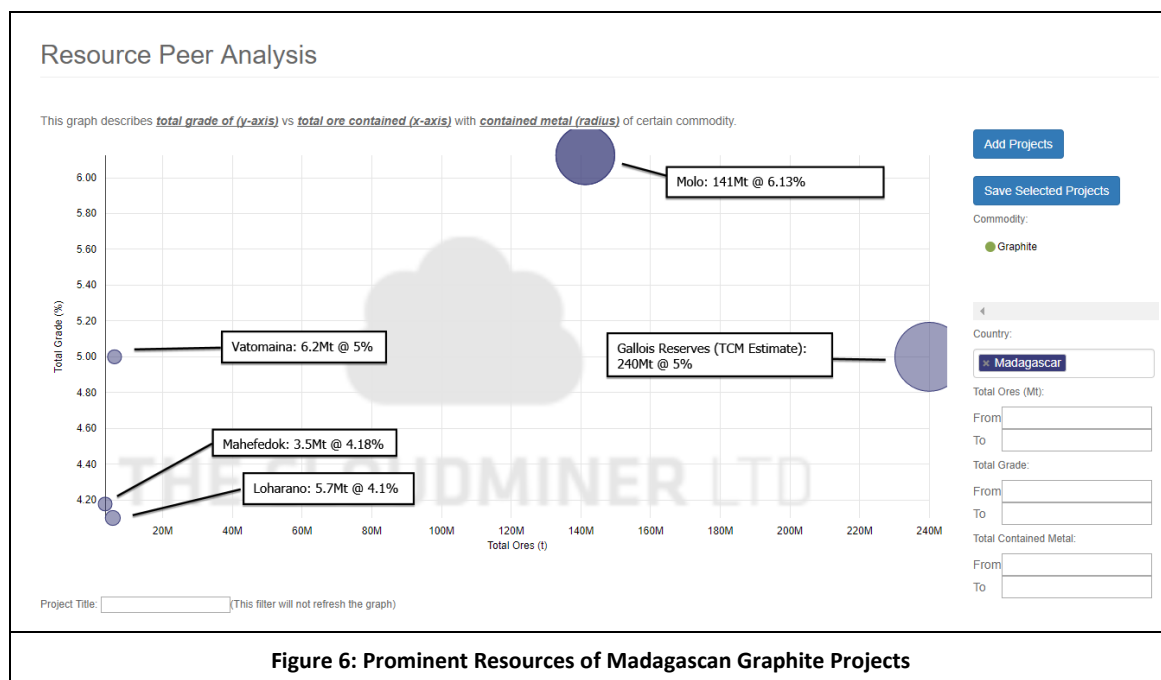
**Figure 5: Major Projects in Madagascar**  
Source: Next Source Materials

Madagascar has a rich heritage in mining having been producing and exporting graphite for the last one hundred years, while tier one miners and juniors have entered post the country's move back to democracy (post 2013). With recent legislative implosions elsewhere in the region Madagascar has grasped the investor uncertainty to position the country as the number one mining destination in E. Africa. As a whole the country remains relatively under explored but with new government initiatives such as a country wide geophysical data and a mining legislation built around the present tier 1 companies, future opportunities in the country look set to explode.

In graphite alone 2016 statistics show that graphite exports have increased reaching eight thousand tonnes from five thousand tonnes in 2014 but still more than half of what they were during the 90's. The following synopsis however will show this is due to

explode with current producers planning expansions and new producers coming on-line in the very near future as the world craves technology metals. As of the time of writing this report, there are currently five advanced companies that we are aware of that are active in Madagascar and either aggressively pushing towards production or looking to increase production capacity.





**Company:** Madagraphite  
**Project:** Gallois Mine  
**Stage:** Operations

**Madagraphite;** currently operates the Gallois Mine, producing since 1907 it is the longest serving graphite mine in Madagascar and billed as one of the largest globally covering an impressive 281km<sup>2</sup> and have a defined reserve of 240Million Tonnes. The current production rate is 4000 tonnes per annum (tpa) but has a capacity to produce up to 10,000 tpa of graphite concentrate. However according to their website, they are poised to ramp up production to 100,000 tpa through two new processing facilities which combined would have the capacity to produce up to 150,000 tpa of graphite concentrate if required making it one of the world's largest operating graphite mines.

**Company:** Next Source Materials  
**Project:** Molo  
**Stage:** DFS

**Next Source Materials;** previously known as Energizer Resources, is developing its Molo graphite project in Madagascar. Molo is one of the largest-known and highest-quality flake graphite deposits in the world; a recent optimised feasibility study proposes an initial production rate of 17,000 tpa with the lowest capital cost of any want to be graphite producer. It will involve a fully modular, two-phased build methodology which dramatically reduces the initial capital required to US\$18.4M with an average cash cost of US\$433/t ex-plant.

**Company:** Bass Metals  
**Project:** Graphmada  
**Stage:** Optimisation

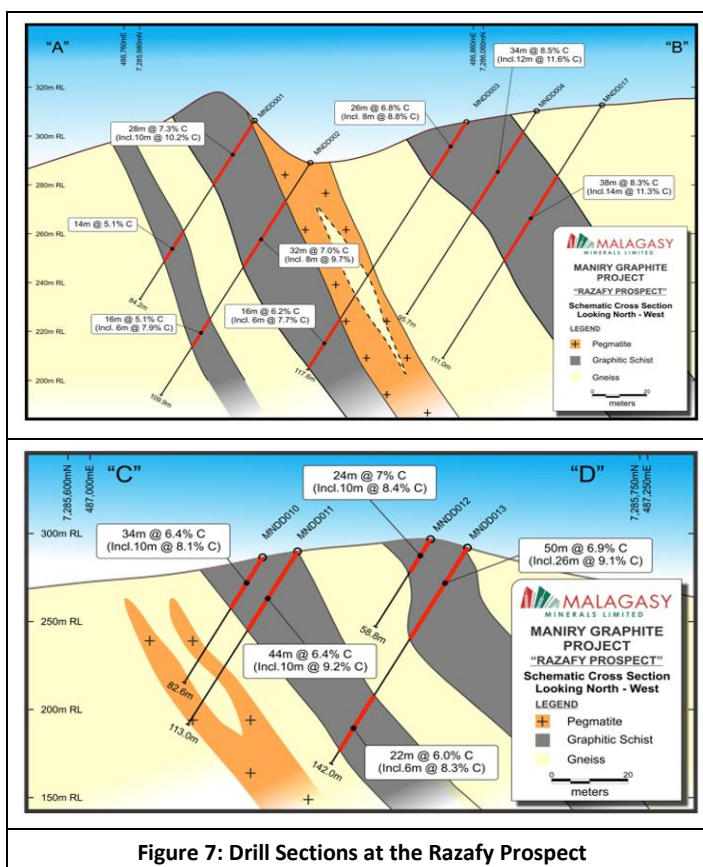
**Bass Metals;** acquired the Graphmada large-flake graphite mine from Stratmin Global Resources in 2016. The mine is currently going through an optimization process to improve cost efficiency — Bass Metals aims to ramp up annual production to 20,000 tonnes by 2019. The Graphmada Mine consists of several projects with the Loharano deposit having previously produced, but it also holds the Mahefodok, Andapa and Mahelaa deposits in the country. Exploration drilling has continued at Mahefodok during 2017 while it has also commenced at Andapa.



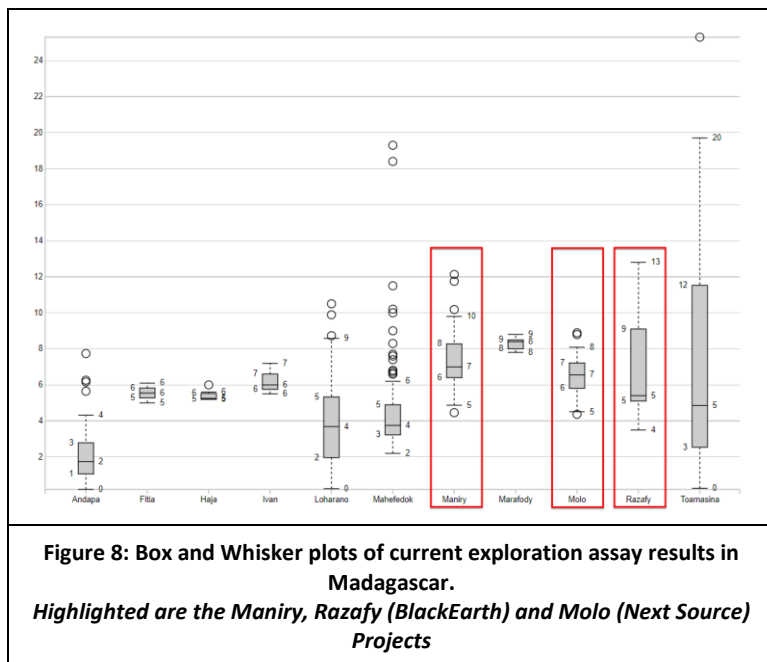
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|---|--|
| <p><b>Company:</b> Tirupati Carbons &amp; Chemicals PVT Ltd<br/> <b>Project:</b> Vatomaina<br/> <b>Stage:</b> Project Development</p> | <p><b>Tirupati Carbons &amp; Chemicals PVT Ltd;</b> a private Indian company with producing assets in Jharkhand - India, first entered Madagascar as a strategic partner with Stratmin. Under the Joint Venture Tirupati planned to produce 12,000 tpa of flake graphite at the Vatomaina Graphite Deposit with production planned to start in October 2017. Capital Expenditure was billed to be US\$5M the lowest per tonne milled globally. Tirupati now owns 98% of the project through the JV company where Stratmin still maintains a majority.</p>  |
| <p><b>Company:</b> Cougar Metals NL/DNI Metals Inc;<br/> <b>Project:</b> Vohitsara a.k.a Toamasina<br/> <b>Stage:</b> PEA</p>         | <p><b>Cougar Metals NL/DNI Metals Inc;</b> DNI entered an earn in agreement with Cougar Metals NL to advance the exploration at DNI's Vohitsara Graphite Deposit, renamed to the Toamasina Project by Cougar. The definitive agreement was signed in March, 2017. Cougar were to produce the maiden resource to an NI43-101 compliance as well as a Preliminary Economic Assessment by October 2017. At this moment both the resource and the PEA remain outstanding. A presentation from February 2017 suggested that Capex for a 12,000tpa operation would be US\$12M with the cash cost between US\$300-350/t, based on a resource grade in the range of 7-10%.</p> |

**BlackEarth Minerals** was incorporated in 2016 with an initial portfolio of West Australian graphite assets; however, in 2017 BlackEarth acquired the Maniry and Ianpera Graphite Projects in Madagascar. The projects about Next Source's Molo Project, famous for its high-grade feed, large flake size and low strip ratio.

Recent exploration history has included detailed regional mapping by BRGM and USGS in 2007 while more intrusive work to date has identified 34 large-scale zones of mineralisation covering an area of 6.5km x 2.5km. The individual lenses in this area have strike extensions up to 1.8km and can be as wide as 350m. Much like at Molo the outcrops are weathered and wide which should result in a low strip ratio and cheaper mining costs.



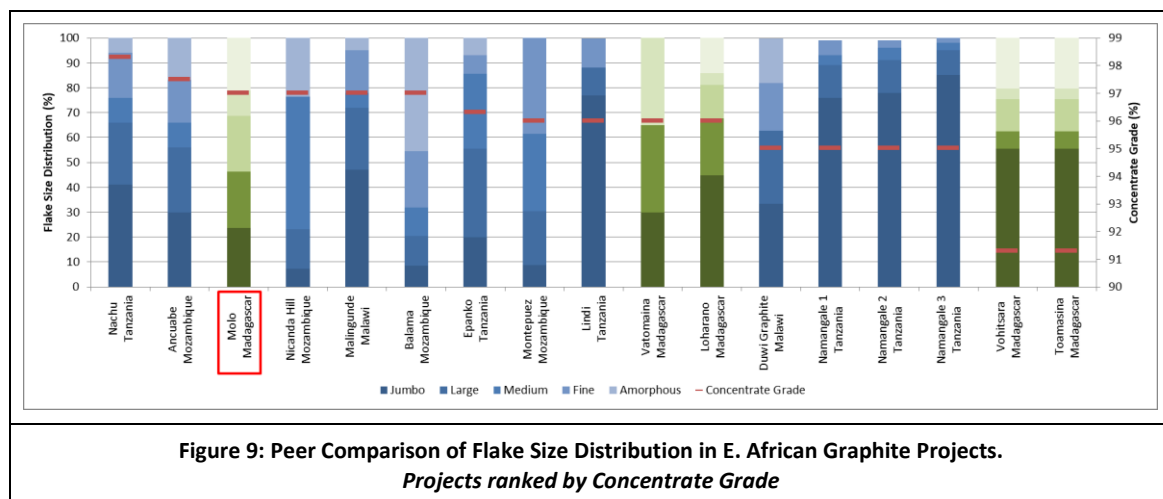




More recently Malagassy Resources carried out more invasive exploration which included surface sampling, trenching and some drilling at several of the prospects. The results consistently returned grades with low variability and coarse flake sizes. The Median grade of this work is around 7% much like Molo (Figure 8) however high grade lenses are present with grades typically 7-20% and a peak result of 50.78%.

Much like the wider mineralisation throughout Eastern Africa the Madagascan projects to date have a larger proportion of Jumbo and Large flake sizes as can be seen below in Figure 9. The Molo Project also boasts a concentrate grade of 97% based on the latest test work. BlackEarth is already seeing similar grades and coarse-grained flakes as discussed and with the historical work to date the aggressive work schedule is to see them advance to a maiden resource in the next five to six months comparable in quality to that seen in the adjacent Molo Project. An anticipated high-grade resource of 9% to 12% contained graphite will be complemented with a much larger exploration target.

The work that has already been done within Madagascar especially next door at Next Source's Molo project shows that a phased development approach is achievable with initial capital costs remaining at sub US\$20M and a CIF cash cost sub US\$700/t for annual capacities of up to 20,000 tpa. BlackEarth should be able to further exploit this advantage with a high feed grade circa 9% primarily consisting of coarse flake material.

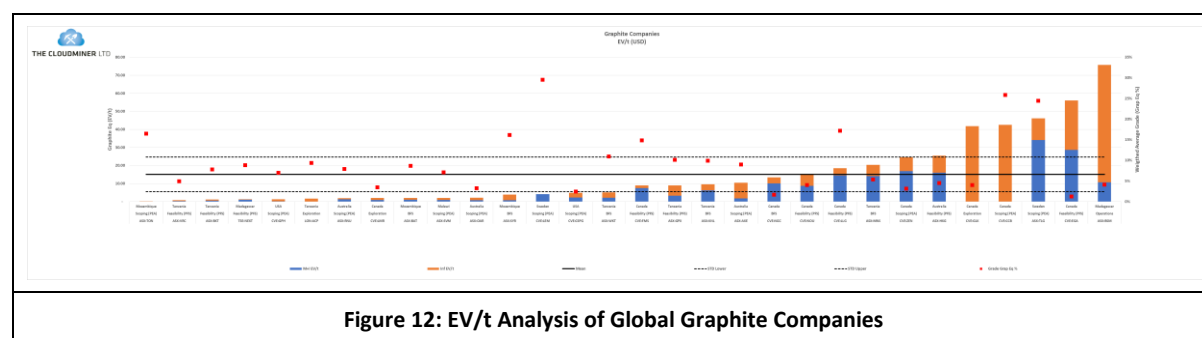




BlackEarth is currently pre-IPO but looking to list late 2017 with the prospectus having already been submitted to ASIC, paving the way for an ASX listing. When comparing the advantages of various global exchanges by Enterprise Values (EV) in Figure 10 Canada boasts the highest value on a US\$/t basis however Australia leads the way in terms of total EV in US\$M doubling that of the Canadian Exchanges whilst also having the vast majority of the contained resource tonnes. Helped in no small part by the large projects located in E. Africa.



As of the report date for 30 graphite focused companies across multiple exchanges the Mean EV/t of contained graphite is US\$15.12/t (Figure 12). For those focused primarily on African assets the Mean drops slightly to US\$11.11/t (Figure 13) inclusive of all development stages.



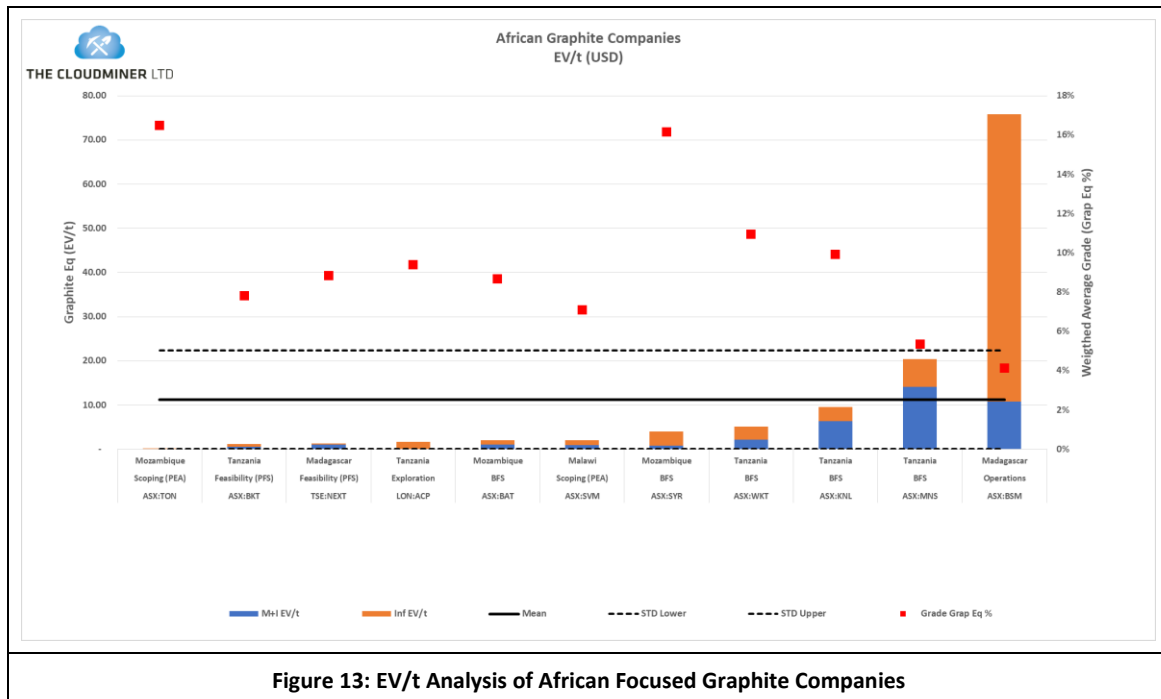


Figure 13: EV/t Analysis of African Focused Graphite Companies

Based on BlackEarth's peers; the value accretion potential is clear when broken out into the project's respective development stage. Both in terms of total EV \$M and as relative measure using an EV \$/t basis as can be seen in both Figure 14 and Figure 15.

The mean Enterprise Value (EV) in a total \$M value for exploration stage companies is US\$8.3M while the median sits at US\$7.0M.

BlackEarth are on a path to rapidly move from an exploration company to delivering their maiden resource and subsequently their first economics in the form of a scoping study. The current total EV for Scoping level companies has a mean of US\$30.7M and a Median of US\$23.5M each showing a multiple of 3 above companies currently in the exploration phase.

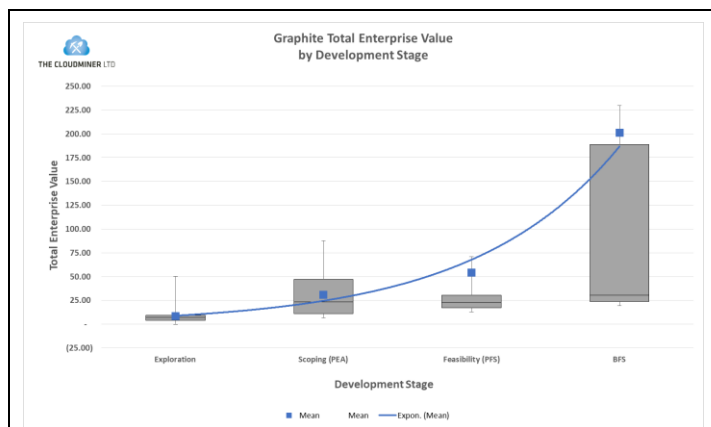


Figure 14: Box & Whisker Plot of Total EV \$M by Development Stage

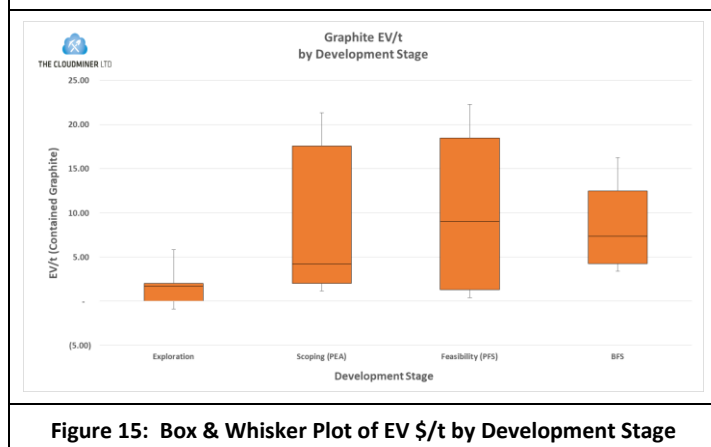


Figure 15: Box & Whisker Plot of EV \$/t by Development Stage

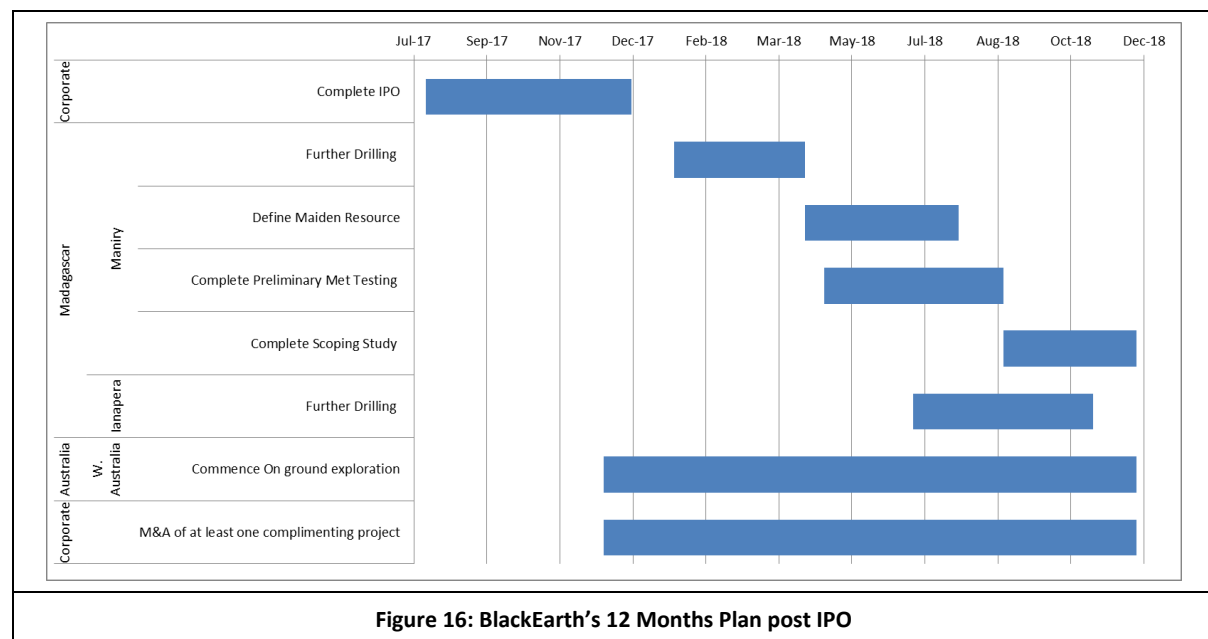


## RISKS

As highlighted at the beginning of the report there are many decision points that are required in advancing a project. Not only are there considerable technical hurdles to overcome but there are also economic and execution risks. BlackEarth are raising enough capital to see the company through the IPO process while completing the necessary exploration, engineering and metallurgical work to complete a Scoping Study.

Engaging with the in-country stakeholders and building lasting relationships at this key point in time will be critical to moving forward harmoniously but in a country that is welcoming mining as a critical part of the economy the path forward looks both sustainable and welcoming as Madagascar takes its place as a contributor to the future of greener mining.

BlackEarth has assembled an experienced Board and Management team that has the necessary skills to deliver on the current scope of works to which the funds will be used. An indicative time line is laid out below which again reflects the managements desire to move the company forward as rapidly as possible.





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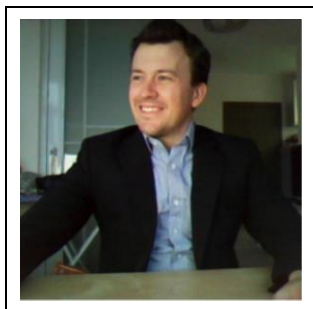
## ANNEXURE A – QUALIFICATIONS AND EXPERIENCE



**Daniel Bloor:** BSc (Geology), MSc (Applied Geosciences)  
**Senior Geologist**

Daniel has over a decade of experience in the mineral and engineering geology industry with a further three years in the UK financial industry. Having worked with multiple commodities as an exploration and production geologist Daniel moved to Hong Kong where he was a consulting resource geologist both for due diligence and independent technical assessments for investment purposes. Daniel Co-Founded the

CloudMiner Limited in 2012 and has spent the last five years evaluating and researching a wide spectrum of minerals projects around the globe.



**Will Coverdale:** BEng (Mining), MAusImm  
**Senior Mining Engineer**

Will is a qualified Mining Engineer with a diverse range of experiences and specialties encompassing both underground and open cut mining across several commodities. This includes specific underground operational experience with the following methodologies; large sub-level caving operations (Cu & Au), board & pillar (coking coal), remnant mining (Au)

and cut & fill mining (Au). Technical experience also covers a number of other commodities including uranium, gold, iron ore and high-grade silica. Country specific mining experience includes Australia, Kazakhstan, Mongolia and the Philippines. Roles have varied from design work, modelling, mine planning and scheduling through to feasibility study management and operational management.



## **ANEXURE B –**

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TCM's opinions contained herein are based on information held in the public domain, which in turn reflect various technical and economic conditions at the time of writing. This is an initial review of what is provided but in no way is to be classified as an in-depth due diligence report. As previously discussed these are typically carried out by a team of experienced professionals which would include reviewing the geology, block models, mine plans, schedule, metallurgy and cost assumptions from an independent view point.

This report includes technical information, which requires subsequent calculations to derive subtotals, totals, averages and weighted averages. Such calculations may involve a degree of rounding and consequently introduce an error. Where such errors occur, TCM does not consider them to be material.

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