



**BlackEarth**  
Minerals NL

ACN 610 168 191

# A Window of Opportunity

**Paydirt's 2018 Battery Minerals Conference  
Presentation | March 2018**



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## **COMPETENT PERSON'S STATEMENT**

*The information in this report that relates to reporting of Exploration Results is based on and fairly represents information and supporting documentation prepared by Peter Langworthy, a member of the Australasian Institute of Mining and Metallurgy, who has sufficient experience relevant to the style of mineralisation and type of deposit under consideration. They are qualified as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves and consent to the inclusion in this report of the matters based on information in the form and context in which it appears.*



# THE BIG STORY - DEMAND



Source: Business Insider UK August 2017

Tesla's Gigafactory is located on a 3000 acre site in Nevada, USA

The factory is 126 acres – could house 100 Boeing 747s

Once fully operational in 2020, it will lower its cost of producing batteries by 30%; the site will produce more batteries than were produced globally in 2013

By 2020, the total cost will be in excess of US\$5B

**Graphite will be the largest input of raw material for Tesla, as much as 70k+ tonnes of flake graphite each year may be required**

# THE BIG STORY - DEMAND



*State Grid Corp. of China (SGCC) battery packs sit on display in the showroom of Wanxiang Group Corp. in Hangzhou, China in September 2016. (Photographer: Qilai Shen/Bloomberg) [-]*

Tesla announced its intentions in 2014 to build its Gigafactory

Since then, led by China, battery cell manufacturing capacity has more than doubled to 125 GWhr; projected to double again to 250 GWhr by 2020 and increase a further 10 times by 2037 adding a further 60 Gigafactories in that period

Source: [www.forbes.com/sites/jackperkowski/2017/08/03/](http://www.forbes.com/sites/jackperkowski/2017/08/03/)

In October 2017, Benchmark Minerals Intelligence reported that three graphite anode plants with an annual capacity of 100,000 tpa are being built in China and Japan. This will bring the total new capacity of anode megafactories to 360,000 tpa.

**Just these factories alone will require over 800,000 tpa of mined flake graphite.**



# THE BIG STORY – THE PLAYERS

Substantial commitments have been made by those with notably large balance sheets.....



Mercedes-Benz



Volkswagen



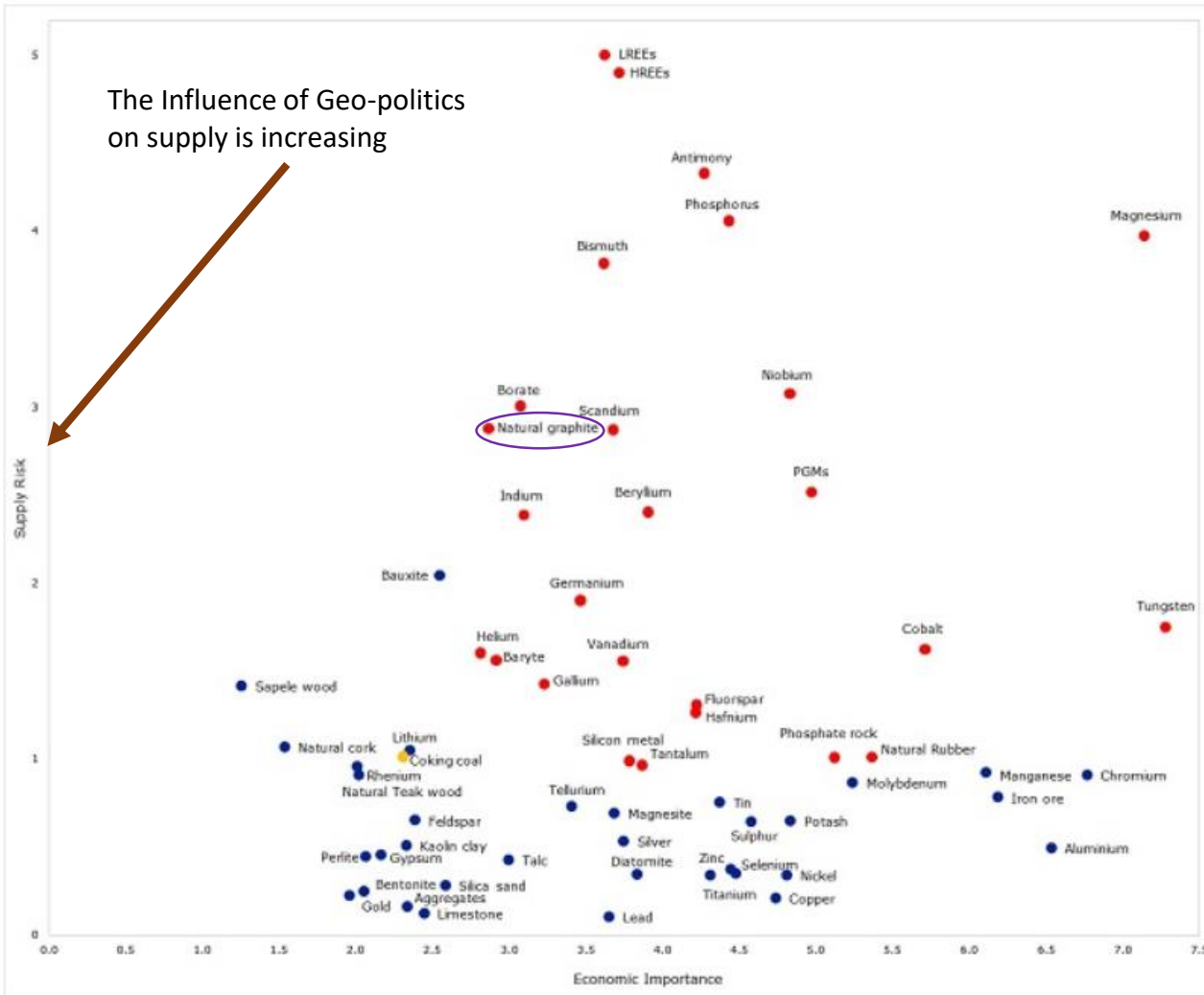
**HONDA**



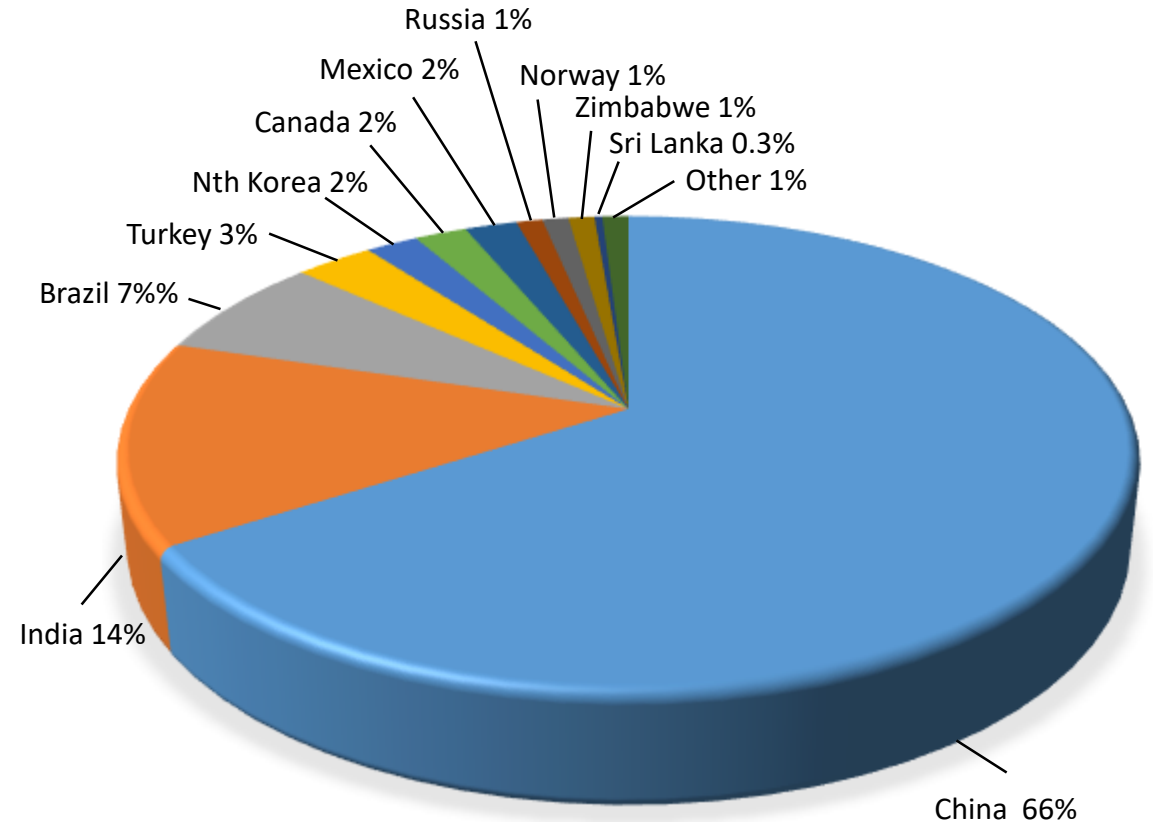
Construction of new facilities and re-tooling existing assembly lines – spending billions of dollars

# THE BIG STORY – SUPPLY (RISKS)

## EU Critical Commodities – December 2017



Source: [http://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical\\_en](http://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en)



Natural graphite production volume  
by country in 2015

Source: United States Geological Survey 2017

# THE BIG STORY – SUPPLY (RISKS)

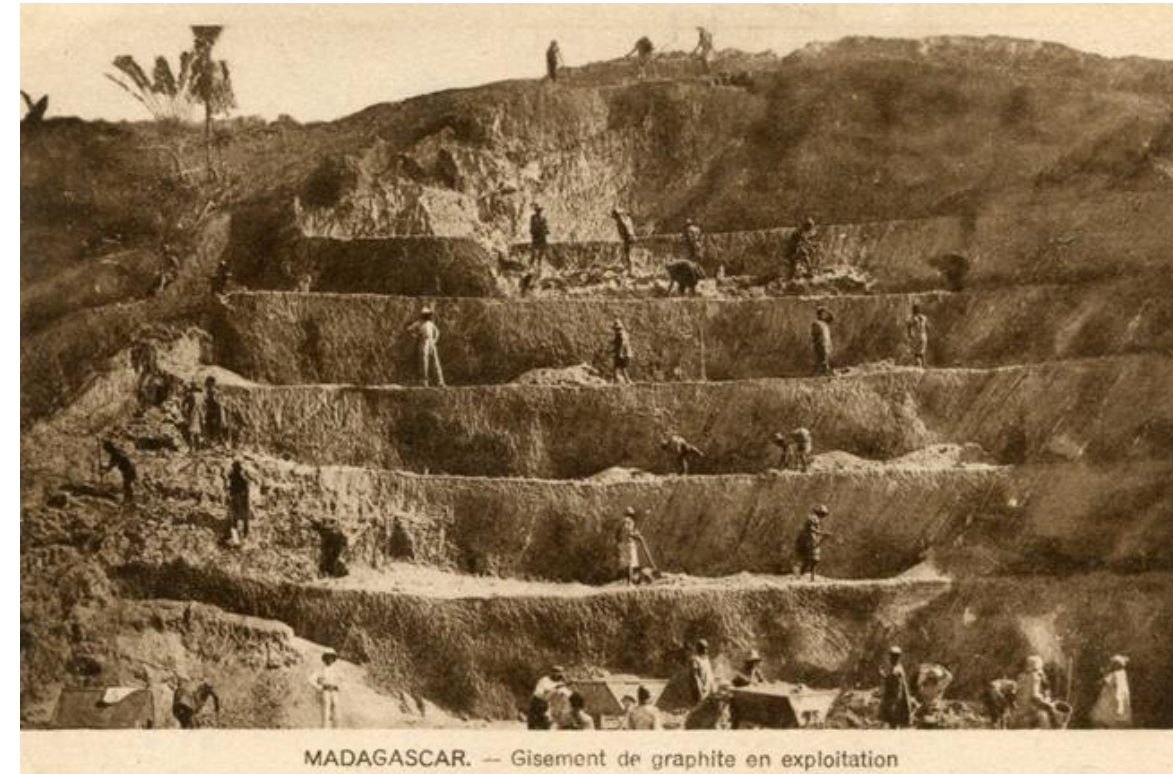
## Responsibly Sourced Minerals – An Emerging Issue

Responsible mining is about minimising the negative effects of mining and maximising the positive outcomes

Responsibly sourced minerals takes into account environmental protection, community involvement, workforce health and safety, transparency in economic contributions (such as taxes, royalties, etc.), energy use, carbon footprint, water management and resource efficiency.

The EU and US are focusing on conflict-affected and high-risk areas; The US's Dodd Frank law (Section 1502) and on 1 January 2021 a new law will come into full force across the European Union – the Conflict Minerals Regulation

While the responsibility may ultimately lie further down the supply chain, miners will need to demonstrate “responsible mining” via auditable managements systems and reporting



Source: [http://img.over-blog-kiwi.com/1/28/70/26/20160316/ob\\_1a1fd8\\_gisement-de-graphite-2.jpg](http://img.over-blog-kiwi.com/1/28/70/26/20160316/ob_1a1fd8_gisement-de-graphite-2.jpg)

## THE BIG STORY – AN EXPERT’S VIEW



*Evy Hambro is co-manager of the BlackRock World Mining Trust plc*

“Today the energy space is evolving towards a low carbon footprint and the combustion engine is going to be replaced with an alternative. We want to be invested in companies that will be producing the raw materials that will be needed to meet this growth”

*Financial Times, Sept 2017*

"When you look at the billions of dollars that are being invested by automotive companies, battery producers, governments building recharging infrastructure and the regulatory pressures, it is a trend that is massive and you would not want to get in the way of it,"

*The Australian Financial Review, Dec 2017*



# THE BIG STORY – AN EXPERT’S VIEW

## Roskill

Roskill reported in International Mining (Oct 2017) that:

- Graphite supply concerns are hitting the headlines again because it is becoming clear that the electric vehicle revolution will have a faster than expected impact on raw materials
- (Re: battery anodes) There will be a continued shift in world graphite markets away from amorphous natural graphite towards flake and synthetic graphite as growing applications require these grades
- A new round of nationally-led plant inspections in China in 2016 and 2017 has reduced flake graphite production by around 30%. Consolidation has taken place in the major producing areas and is expected to continue at a low level
- China continues to dominate the lithium-ion battery supply chain and that in 2017 China is still the world’s largest producer of flake graphite, spherical graphite, lithium-ion anode material, lithium-ion anodes and lithium-ion batteries

# THE BIG STORY – COST PRESSURES

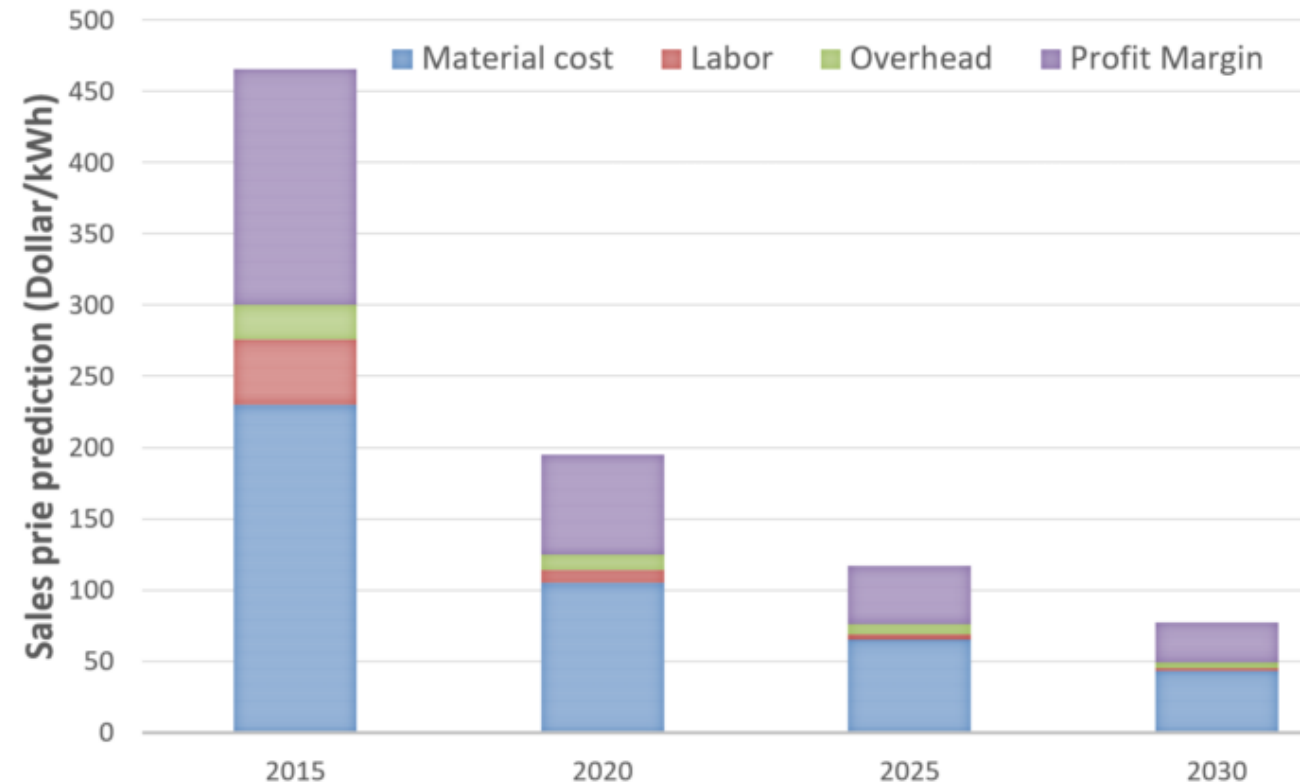
Continued pressure to lower the cost of Li-ion battery production

Material input costs amount to 60% of Li-ion battery production

Battery costs have reduced from US\$3,000/kWhr in 1995 to US\$300-400/kWhr in 2015

The US\$100/kWhr sales barrier is expected to be reached around est. 2025

Pressure will continue to lower all costs of battery manufacture including raw materials; operating costs for miners needs to be a real focus



Prediction of Sales Price

Source: [www.mdpi.com/1996-1073/10/9/1314/pdf](http://www.mdpi.com/1996-1073/10/9/1314/pdf)



# THE OPPORTUNITY – BLACKEARTH MINERALS

- BlackEarth Minerals NL (“**BlackEarth**” or “**the Company**” or “**BEM**”) listed on the ASX on 19 January 2018
- In early 2018, the Company finalised its acquisition of the Maniry and Ianapera graphite projects in Madagascar – strategic location
- BEM’s Board and management team comprise of personnel with the necessary graphite technical skills, African / Madagascan project development experience and key commercial / corporate capabilities
- Six weeks after listing, the Company commenced its diamond drilling program on the Maniry project. Previous diamond drilling to date has returned results\* (within 50 metres of surface) of:
  - 10m at 10.2% TGC
  - 12m at 11.6% TGC
  - 14m at 11.3% TGC
  - 8m at 9.7% TGC
  - 26m at 9.1% TGC

\*As reported in the Replacement Prospectus dated 24 November 2017



# THE OPPORTUNITY – BLACKEARTH MINERALS

- The Company currently expects to define a maiden resource at Maniry by mid 2018
- BlackEarth intends to commence trenching at the Ianapera project H2 2018 following excellent rock chip results obtained previously (10-38% TGC)
- BEM is currently planning exploration activities on its Western Australian graphite assets which it expects to implement in coming months
- The Company plans on completing preliminary mineralogy and metallurgical testwork in Q3 2018, and a scoping study late Q4 2018, on its Maniry project
- BlackEarth will continue to review other graphite opportunities to compliment its current portfolio of quality assets

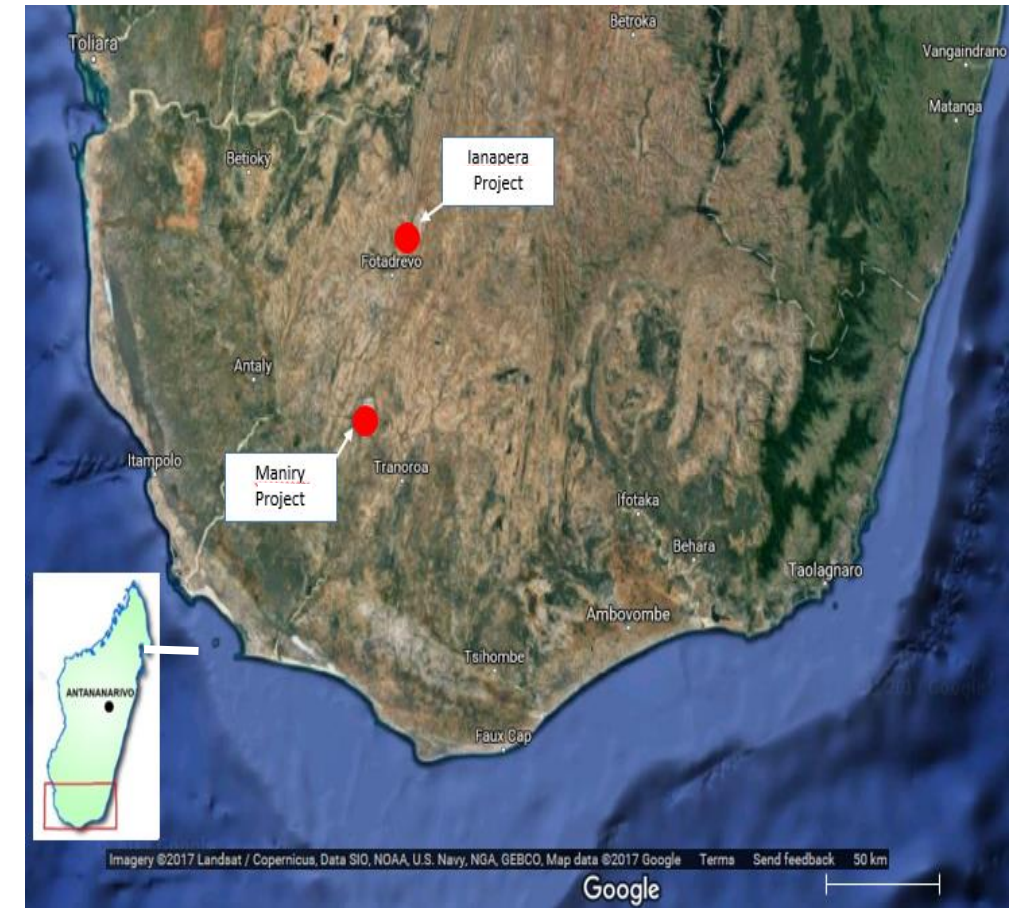


Diamond core from the current Maniry drill program



# THE OPPORTUNITY - MADAGASCAR

- Madagascar has over **100 years of graphite mining history – low production costs**
- Madagascan Graphite Standard – history of **quality large flake product**
- **Favourable exploration environment** and extremely underexplored
- Madagascar's economy is **forecast for positive medium-term economic growth**, estimated to reach 5.1 percent of GDP in 2018, and then average 5.3 percent over the 2019 to 2022 period
- **The World Bank Group pledged US\$1.3B** between 2016-19 through its national development plan
- No conflict nor on the border of conflict zones; **democratic elections due late 2018**
- Recent acquisition of Toliara Sands Project for US\$92M by Base Resources demonstrates **confidence in the Madagascan mining industry**
- Top 5 trading partners: **France**: US\$630.4 million (22.5% of total Malagasy exports), **United States**: \$525.7 million (18.8%), **Germany**: \$203.7 million (7.3%), **China**: \$176.4 million (6.3%), **Netherlands**: \$140.4 million (5%)



Current large operators in country

# THE OPPORTUNITY - INFRASTRUCTURE

- Port (Fort Dauphin) located 230km from site; recently established (by Rio Tinto) with 15m+ draft and significant storage
- Roads from site(s) to the port are in place but can vary in quality. Currently used regularly by trucking companies for the transport of labradorite slabs for export
- Based on work undertaken by consultants to the Molo Project, water is likely to be supplied by a mine bore field
- Power is likely to be generated in early development stages by diesel powered generators. Low energy consumption process
- A number of all-weather airstrips exist in the immediate area





# THE OPPORTUNITY - MANIRY

- 34 large-scale zones of outcropping graphite mineralisation over an area of a 6km x 2.5km.
- individual lenses have strike extensions of up to 1.8km and can attain widths of up to 350m
- Sampling indicates consistent grades of 7-20%TGC with low variability and the potential for areas of very high-grade mineralisation (peak result 50%TGC)
- Drilling results to date\* (within 50m of surface) include:
  - **10m at 10.2% TGC**                      - **8m at 9.7% TGC**
  - **12m at 11.6% TGC**                      - **26m at 9.1% TGC**
  - **14m at 11.3% TGC**                      - **10m at 9.2% TGC**
- Traverse sampling over 14 selected graphite lenses returned surface, composite rock-chip results\* of:
  - **175m at 11.75% TGC,**
  - **90m at 12.13% TGC**
  - **150m at 10.18% TGC**
- Consistently coarse flake graphite size with recently announced mineralogy report confirming the high quality and coarse nature of the graphite (up to several millimetres)



\*As reported in the Replacement Prospectus dated 24 November 2017



# THE OPPORTUNITY - MANIRY

## Community Interaction



Above: The Mayor of Maniry (centre) meets with BEM's Managing Director – Tom Revy and the geological team

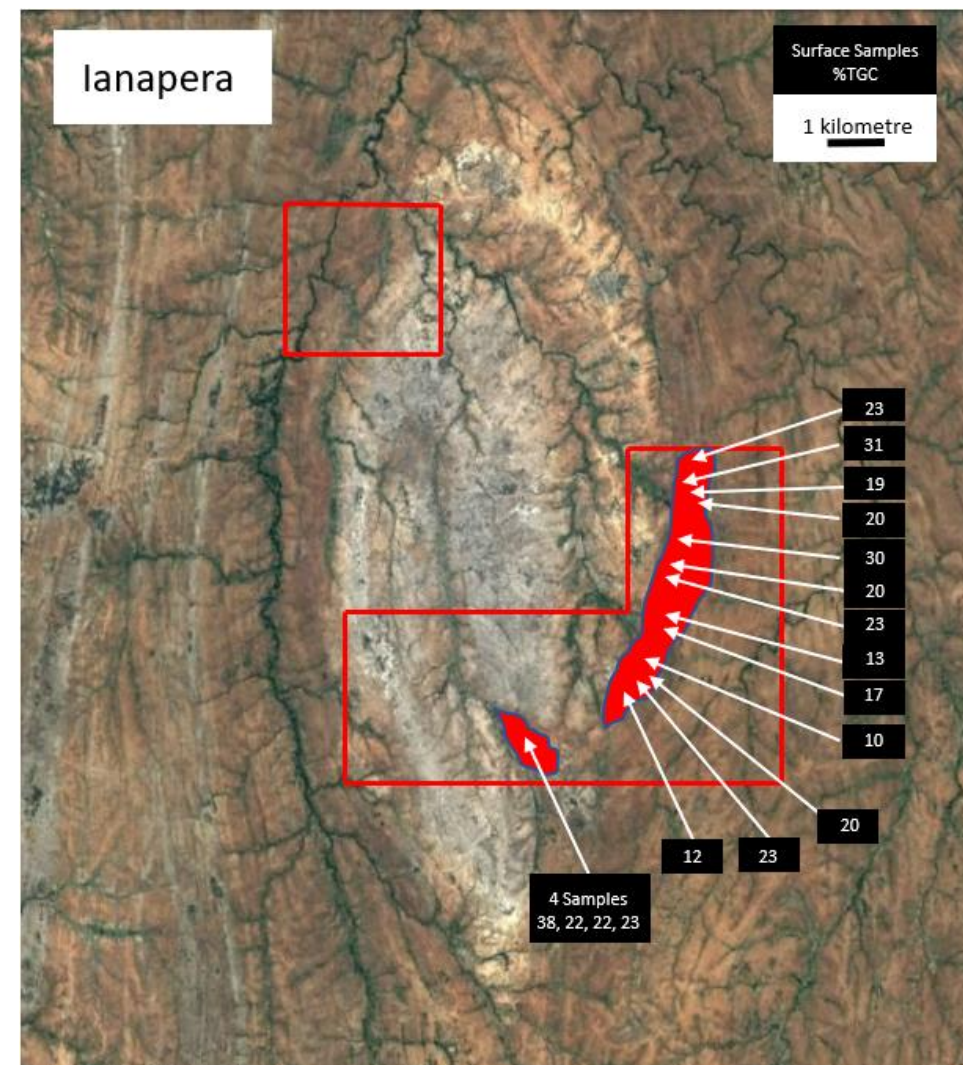
Below: The Mayor of Maniry meets with the local Chiefs to encourage cooperation and support with BEM prior to the recent commencement of the drilling program





# THE OPPORTUNITY - IANAPERERA

- Granted “ML”s (40 year term + 20 year options thereafter)
- All surface rock chip sample grades included (Right) – not selective results
- These samples lie over the top of a large conductive body as defined in the airborne electromagnetic data (VTEM)
- Over 70% of the results  $\geq 20\%$  TGC
- The project area lies 5-10km from TSX listed NextSource Materials Inc’s (Formally Energizer) Molo Graphite Project
- Trenching at Ianapera is planned to commence H2 2018





# THE OPPORTUNITY – THE MANAGEMENT TEAM

	Experience (years)	Graphite	Madagascar	Africa	Project Development	Corporate / Commercial	Offtake Management
Phil Hearse	40+	✓	✓	✓	✓	✓	
Tom Revy	35			✓	✓	✓	✓
George Bauk	25			✓	✓	✓	✓
Barry Woodhouse	30			✓	✓	✓	
Peter Langworthy*	30	✓	✓	✓	✓	✓	

\*Competent Person



# THE DEVELOPMENT STRATEGY

2018 - 2019

- The BEM Board and management remain bullish in terms of the medium to long term outlook for graphite
- Learn from the lessons from others
- The aim is to define a near surface high grade Resource (9-12%TGC) and Exploration Target by mid 2018
- Complete scoping study on Maniry by late Q4 2018 based on a phased development approach (high grade feed / quality product)
- Continue the fast-track approach by completing a feasibility study in 2019
- Offtake arrangements will need to reflect product options and market entry / demand scenarios
- Develop on a competitive capital and operating cost basis
- Maintain interaction with the local communities and government, HSEC standards and reporting, financial transparency and energy management with an aim of producing “responsibly”





Thank you

