ASX: BEM

14 February 2020

ASX Announcement

BLACKEARTH GRAPHITE SUITABLE FOR LITHIUM ION BATTERIES

- **Independent German full service specialist in testing and engineering services, ANZAPLAN , has successfully completed a graphite anode suitability test program**
- **BlackEarth Minerals' 99.97% purity spheroidized carbon suitable for use in anode production for the lithium ion battery market**
- **Testwork indicates that BEM concentrate produced results similar to a high-performance reference graphite material used by ANZAPLAN. BlackEarth is continuing discussions with industry leading manufacturers of lithium ion batteries, with the aim of entering into offtake agreements.**

BlackEarth Minerals NL (**ASX: BEM**) **("BlackEarth",** or the "Company") is pleased to announce the receipt of the final testwork report from Dorfner ANZAPLAN ("ANZAPLAN"), a leading independent German full service specialist in testing and engineering, which BEM engaged in May 2019, to undertake an expansive testwork program for evaluating BEM graphite concentrate from the Maniry project in Southern Madagascar with regard to graphite anode suitability.

The graphite concentrate evaluation testwork program undertaken by ANZAPLAN considered:

1. Chemical and Physical characterisation;
2. Micronisation and Spherodization performance and characterisation;
3. Purification of the Spherical Graphite produced; and
4. Electrochemical characterisation of the Spherical Purified Graphite.

Items 1 – 3 (above) have previously been reported (ASX:BEM 12 August 2019 and ASX:BEM 3 September 2019).

The spherical graphite purification testwork included:

1. Conventional acid leach
2. Microwave assisted acid digestion
3. HF acid "Free" acid digestion
4. Thermal purification

In all four different purification methods tested, the spherical graphite was able to be purified to the minimum + 99.95 wt.-% fixed carbon which is required for battery applications. The testwork demonstrated the amenability to readily purify BEM spheroidized materials, in meeting battery grade specifications. It should be noted that the testwork was preliminary in nature and not optimised in terms of reagent consumptions and conditions,

Following successful purification and spheroidization testwork, preliminary electrochemical characterization testwork was undertaken. This involved using BEM material as an anode and testing its effectiveness within a lithium ion battery over time. Testwork was completed on a sample of spheroidized and purified graphite (BE L7) with the following characteristics shown in Table 1.

Table 1: Physical characteristics purified SPG product BE L7*

Tap density [g/cm³]	D50 [µm]	D90/D10 ratio [-]	BET [m2/g]	Fixed Carbon [LOI %]
0.94	14.7	2.6	6.9	99.96

**values were based on previous BE SP S1 testwork*

For electrochemical evaluation, single layer full pouch cells were fabricated as shown in Figure 1.

Image 1: Image of a single-layer pouch test cell

Preparation and testing of an anode material in full cells is the method of choice for most accurately characterizing the relative performance of a new material in actual lithium-ion cells. It is therefore preferable over testing in conventional half coin cell constructions.

The testwork comprises the following individual steps:

- Determination of formation capacity and first charge efficiency;
- Determination of cycling performance (100 cycles); and
- Determination of rate capability.

In addition, the BEM material was compared to a high performance purified spherical graphite reference material which represents a reference material in the upper third of quality materials used in the anode application.

The testwork indicated that the BEM material produced results (refer to annexure A) that were similar to the high-performance reference graphite material.

The BEM graphite concentrate from the Maniry project in Southern Madagascar, which is the subject of this announcement, is a product of metallurgical test work completed in late 2018. This was the subject of an announcement made on 12 December 2018 titled “Update to Maniry Metallurgical Test Work”. The announcement outlines the sample selection/drill hole data in detail and the logic applied as to why it is representative of the Maniry Resource, and refers to the future requirement for downstream test work, which is the subject of this announcement. A summary of this information is included in Annexure B.

In summary, the testwork has demonstrated that the BEM graphite material:

- Can be successfully spheroidized and purified by industry standard methodologies; and
- Preliminary electrochemical testwork on uncoated spheroidized purified graphite has shown suitability for Li battery applications.

BlackEarth Managing Director, Tom Revy, commented: "The test results achieved by ANZAPLAN, further demonstrate the suitability of Maniry Project concentrate, for use in anode production for the lithium ion battery market. The test results are an important component towards the end-user qualification process and ultimately off-take agreements, with industry leading manufacturers of lithium ion batteries. BlackEarth is currently continuing offtake discussions and look forward to updating the market further."

This announcement is authorised for release by Mr Tom, Revy, Managing Director.

CONTACTS

Tom Revy	BlackEarth Minerals NL	08 6145 0289 | 0411 475 376
Jane Morgan	Investor and Media Relations	0405 555 618

BlackEarth encourages investors to update their contact details to stay up to date with Company news and announcements here: http://www.blackearthminerals.com.au/update-details/

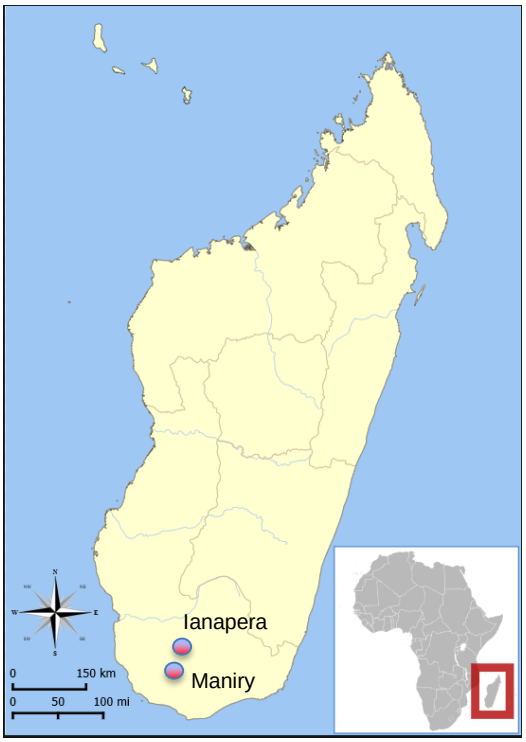
Competent Person's Statement

- The information in this report that relates to metallurgical test work results is based on information compiled and reviewed by Mr David Pass, who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Pass is an employee of BatteryLimits. Mr Pass has sufficient experience relevant to the mineralogy and type of deposit under consideration and the typical beneficiation thereof to qualify as a Competent Person as defined by the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2012 Edition). Mr Pass consents to the inclusion in the report of the matters based on the reviewed information in the form and context in which it appears.

For more information – www.blackearthminerals.com.au

About BlackEarth Minerals NL

BlackEarth Minerals NL (ASX:BEM) is an ASX listed company focussed primarily on the development of its 100% owned Madagascan Maniry and Ianapera graphite projects. For more information, visit https://www.blackearthminerals.com.au.



Project Life	10 Years
NPV @ 10% pre-tax	US$ 103M
IRR pre-tax	42%
Project CAPEX Stage 1	US$ 41M (500ktpa ore)
Project CAPEX Stage 2	US$ 29M (1Mtpa ore)
Payback for Stages 1 & 2	3.7 years (Stage 1 - Only 2.7 years)
Annual graphite production	Av 30ktpa (Stage 1 – Years 1-3) Av 60ktpa (Stage 2 – Years 4+)

Project	Deposit	Tonnes (Mt)	TGC Grade (%)	Contained Tonnes (t)
Maniry	Razafy - Indicated	8	7.22	677,600
	Razafy - Inferred	3.2	6.8	217,600
	Razafy -Total	**11.2**	**7.1**	**795,200**
	Haja - Inferred	9	5.79	521,100
	Haja Total	**9**	**5.79**	**521,100**
	Total Resources	**20.2**	**6.51**	**1,316,300**

Above: Maniry Graphite Project Scoping Study Results
Left: Location of BEM's Maniry & Ianapera graphite projects

The Razafy Resources (both indicated and inferred) are reported at 6% TGC with cut off constraining wireframe solids defined at a nominal 3% cut off grade.

The Haja Resource is reported at 5% TGC cut off with cut off constraining wireframe solids defined at a nominal 15% cut off grade.

The indicated mineral resource at Razafy was first reported in the announcement of 14 August 2018 entitled "Update – Maiden Resource Estimation for Razafy at Maniry Project".

The inferred mineral resource at Razafy was first reported in the announcement of 14 August 2018 entitled "Update – Maiden Resource Estimation for Razafy at Maniry Project".

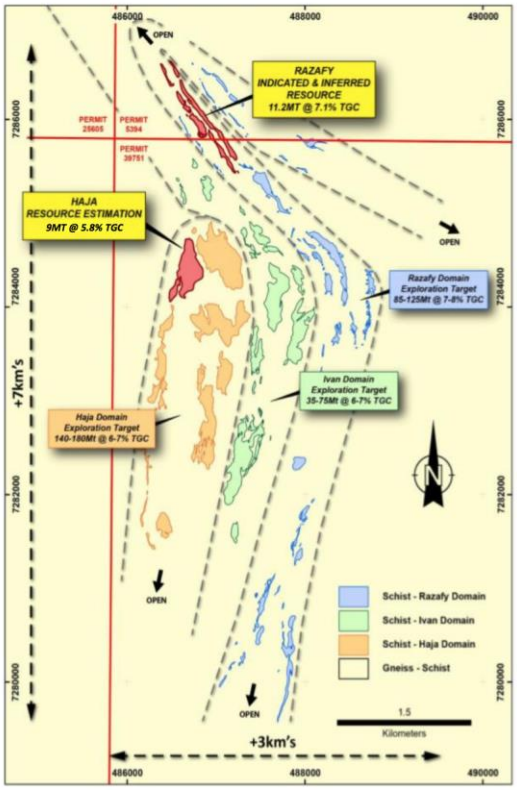
The inferred mineral resource at Haja was first reported in the announcement of 27 December 2018 entitled "Maiden Resource Estimation for Haja at Maniry Graphite Project".

There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

The potential quantity and grade of an exploration target is conceptual in nature, there has been insufficient exploration to determine a mineral resource and there is no certainty that further exploration work will result in the determination of mineral resources or that the production target itself will be realised.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement in respect of the scoping study results (see the announcement of 30 January 2019 entitled "BlackEarth announces positive Scoping Study results for the Maniry Graphite Project") and that all material assumptions and technical parameters underpinning the estimates of forecast financial information continue to apply and have not materially changed.

Additionally, the Company confirms that it is not aware of any new information or data that materially affects the information regarding the indicated mineral resource at Razafy in the announcement of 14 August 2018 entitled "Update – Maiden Resource Estimation for Razafy at Maniry Project", which forms the basis of the production targets outlined in the table above.



Maniry Graphite Project – Overview

For further information regarding the Maniry exploration target, please refer to the announcement entitled "Exploration Target Update" dated 14 August 2018 "Update Maniry Exploration Target"

Annexure A

Summary of Electrochemical characterization testwork
Dorfner Anzaplan Feb 2020 Report no 211613361

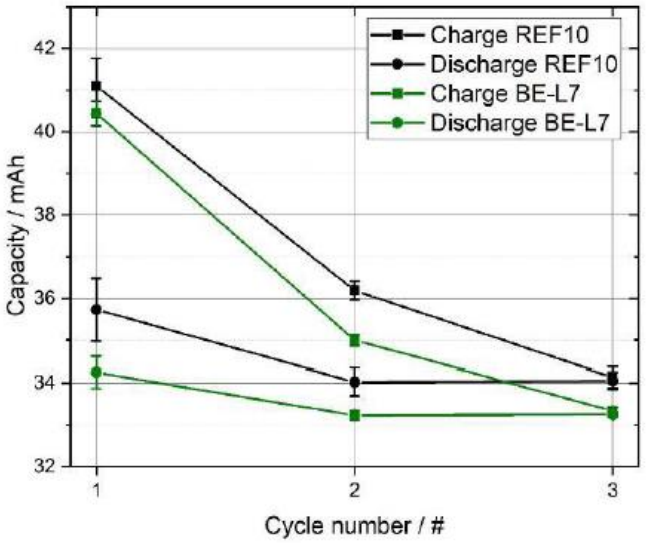
Determination of Formation Capacity and First Charge Efficiency

Standard formation results of the two graphite samples are listed in Table 1 and illustrated in Figure 1. The coulombic first charge efficiency of graphite BE L7 (~85%) delivers slightly lower coulombic efficiencies compared to graphite Ref 10 (~87%). This fact resulted in slightly lower capacities in a full cell setup. Sample Ref 10 is in the range for typical standard products.

Table 1: Total capacities and efficiencies for full cell formation (3 cells each) of both types of graphite

Type	1st Charge	1st Discharge	Efficiency
	[mAh]	[mAh]	[%]
Ref 10	41.10 ± 0.67	35.73 ± 0.75	87
BE L7	40.44 ± 0.30	34.24 ± 0.38	85

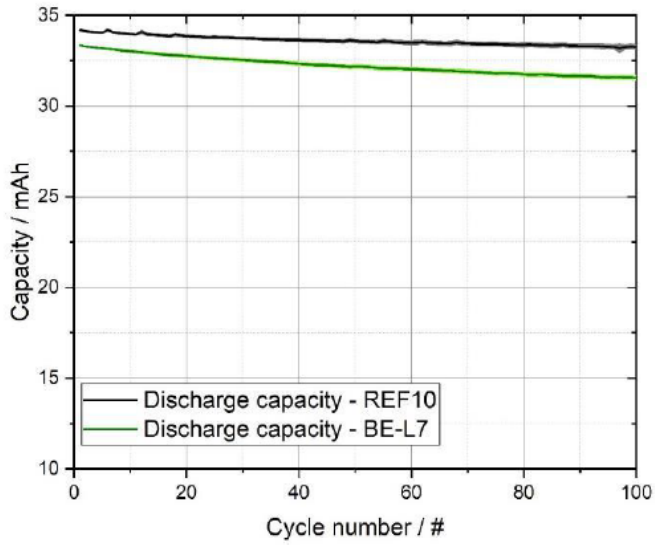
Figure 1: Formation capacities of both graphite samples



Cycling Performance

CCCV cycling (Constant current, constant voltage) in full cell configurations shows slightly lower cyclability of sample BE L7 compared to reference sample Ref 10, which is superior. After 100 cycles full cells containing graphite BE-L7 achieves ~31.6 mAh (~95% of initial capacity) while sample Ref 10 delivers ~33.2 mAh (~97% of initial capacity).

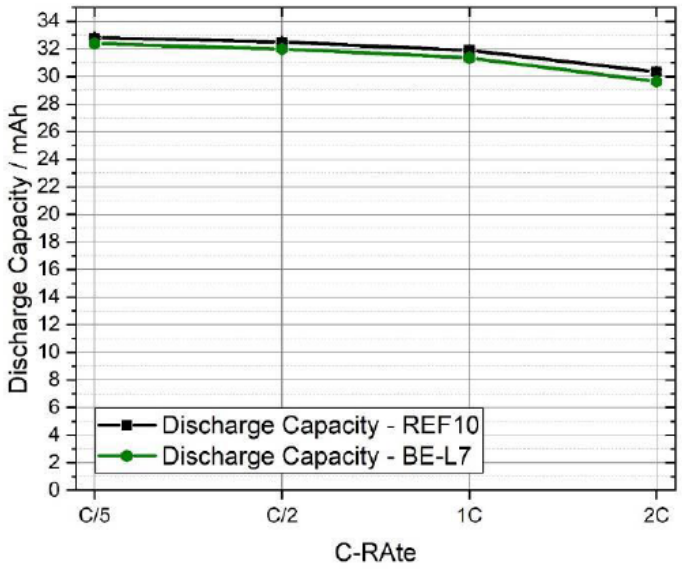
Figure 2: Cycling performance (capacity vs cycle number) of both full cells



Rate Capability

Rate capability testing (Figure 3) shows that electrodes of sample Ref 10 deliver slightly higher discharge capacities at all tested current rates. The capacity drop at different C-rates of both samples is comparable, which indicates that rate capability is almost the same.

Figure 3: Rate capability of all full cells ate capability is almost the same.



Annexure B

The following provides the outcomes on the comprehensive metallurgical test work program completed on bulk samples from the Razafy Resource. The Razafy Resource sits within the Company's broader Maniry Graphite Project which, covers a total of 142 km^2 in southern Madagascar.

The bulk composite sample was sent to ALS Laboratory in Perth in late August 2018. The sample based on earlier laboratory and mineralogical results was deemed representative of the Razafy Resource by the Company's Competent Person (Metallurgy), Mr David Pass from BatteryLimits. The results, shown below, reaffirm the Company's earlier positive preliminary results announced on 16 October 2018.

Flake Size	(microns)	Mesh	Master Composite	
			Mass (%)	TGC (%)
Super Jumbo	> 500	38	2.8	95.8
Jumbo	300 – 500	50	17.3	96.1
Large	180 – 300	30	29.8	95.6
Medium	150 – 180	20	9.1	95.0
Small	-75	100	23.6	96.8
Fine	< 75	-100	17.4	96.1

Table 1: Concentrate Grade and Size Distribution

The results from this test work program were be used to finalise the Maniry Graphite Project's process flow sheet and current Scoping Study, ahead of the commencement of the bankable feasibility study which was due to commence in Q1 2019.

Metallurgical Test Work:

1.1 Introduction

A diamond core drill program was conducted in early 2018 to generate samples for metallurgical testwork. From these drill programs, sampling and compositing was undertaken to generate representative samples to assess the ore's amenability to beneficiation by froth flotation, and also to identify the nature, flake size and occurrence of the graphite in a selection of drill core samples and flotation products. The metallurgical testwork program was managed by BatteryLimits and was undertaken at ALS Laboratory (ALS) in Perth.

An initial optimisation program was conducted on a Master Composite, with a variability program following afterwards. A 50 kg Master Composite sample underwent testwork to produce graphite concentrate for marketing purposes.

1.2 Samples Details.

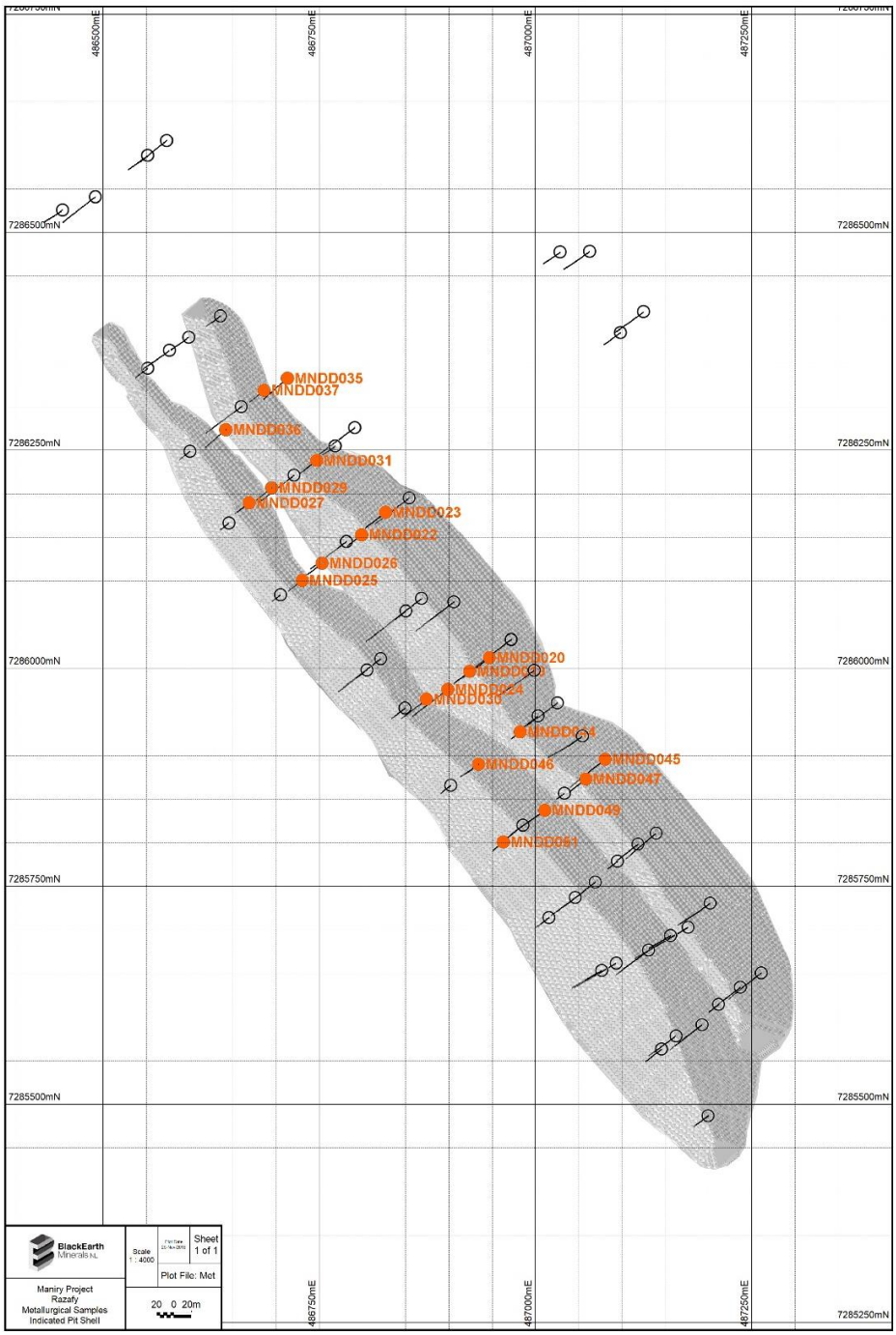
Selected interval samples of cut diamond drill core, from twenty drill holes, were used to generate ten composite samples. The drill holes used for the metallurgical testwork program are summarised in Table 2. Approximately 800 kg in total was sent to ALS.

Drill Hole ID	Depth (m)	
	Initial	Final
MNDD019	11	33
MNDD020	36	64
MNDD022	7	36
MNDD023	42	54
MNDD024	75	97
MNDD025	24	38
MNDD026	54	63
MNDD027	23	39
MNDD029	61	71
MNDD030	46	63
MNDD031	19	24
MNDD035	60	72
MNDD036	46	55
MNDD037	35.5	44.85
MNDD044	10.05	21
MNDD045	51	65
MNDD046	44	57
MNDD047	8	30
MNDD049	68	84
MNDD051	4	24

Table 2: Metallurgical Drill Hole Details

Metallurgical drill hole locations are shown below with respect to the East/West veins.

Figure 1 Razafy Drill Hole Locations



1.3 Composite Details and Assay

The composites were formed based on grades, mineralisation, spatial locations over the two east/west veins. Geochemistry characteristics were used to separate the chosen composites into groups or clusters-with homogeneous geochemical signature for variability testing. The Upper composites consisted of intervals with a RL number of over 260 while Lower composites have RL numbers under 260. The Master Composite was formed by proportionally combining all clusters.

A summary of head assays results for the composite samples is shown in Table 3.

Table 3: Head assay

Composite ID	Number of Intervals	C(t) (%)	TGC (%)	SiO2 (%)	S(t) (%)
Cluster 2	6	11.6	9.39	51.0	0.04
Cluster 7	5	8.10	8.04	51.6	1.16
Cluster 4	25	9.21	9.12	59.4	1.18
Cluster 3 Upper West	19	8.01	7.92	59.8	0.72
Cluster 3 Lower West	27	8.85	8.58	63.8	0.92
Cluster 3 Upper East	50	8.73	8.37	55.8	0.70
Cluster 3 Lower East	26	9.18	9.00	68.4	1.76
Upper Zone	C3 Upper and C4 Upper	8.67	8.70	62.0	1.30
Lower Zone	C3 Lower and C4 Lower	8.43	8.22	63.2	0.98
Master Composite	All Clusters	9.00	9.00	60.4	1.08

1.4 Comminution Test Results

Bond Rod, Bond Abrasion and SMC (SAG Mill Comminution) tests were conducted on both the Upper and Lower Composites. From the comminution test data, the Razafy material would be considered soft and not abrasive. A summary of results is shown in the tables below.

Table 4: Summary of Bond Rod Mill Work Index Results

Sample	Bulk Density (t/m3)	Size P80 (µm) [1]		BRWi (kWh/t)
		Feed	Product	
Upper Composite	1.60	8,308	799	9.3
Lower Composite	1.55	8,353	821	9.3

1. Closing screen 1,180 µm

Table 5: Summary of Bond Abrasion Work Index Results

Sample	Bond Abrasion Index (Ai)
Upper Composite	0.0398
Lower Composite	0.0340

Table 6: Summary of SMC Testwork Results

Sample	DWi kWh/m^3	SG	Derived Values			Mi Parameters (kWh/t)		
			A	b	ta	Mia	Mih	Mic
Upper Composite	1.5	2.31	74.7	2.06	1.73	6.9	3.8	1.9
Lower Composite	1.2	2.25	74.6	2.57	2.21	5.8	3.0	1.6

1.5 Flotation Test Results

The preliminary flotation tests were planned with the intent to maintain the graphite flakes as coarse as possible, while achieving high recovery to concentrate. As a general rule, notwithstanding liberation effects, the larger the graphite flake size, the higher the carbon content in the concentrates. The general flotation objectives were to:

- Produce graphite concentrates >95% TGC
- Produce coarse flake size
- Recover >90% of the graphite to a concentrate.

An optimisation program was initially conducted on the Master Composite where the results indicated:

- The coarse flakes needed grinding to liberate the gangue material.
- In order to retain coarse flakes and achieve acceptable recovery the coarse rougher flotation tails had to be reground before running through a scavenger circuit.
- Good recovery and upgrade were achieved at coarse particle size with typical concentrate PSD in the size range of P80 300 µm
- Screening out the +150µm earlier allowed for the finer material to be reground with more intensity to achieve TGC grades +96% TGC.
- General trend observed increased overall concentrate grade with increased regrind time and increased graphite liberation
- Flotation using site water was conducted with no detrimental effects observed.

The optimal run that achieved the better results consisted of a primary grind comprised of stage rod milling. The rougher tails were then stage ground before running through a scavenger circuit. The rougher and scavenger concentrates were combined before a polishing regrind and cleaner stage. This was followed by stirred milling/cleaning before being screened. The finer material was then sent for further stages of stirred milling/cleaning.

The flotation reagent scheme consisted of a conventional collector, and frother. Tests were performed with a 1 kg sample, using a Denver float machine. Rougher, scavenger and first cleaner tests were performed in a 4L cell with the remaining cleaners being conducted in a 2L cell.

A total of 25 flotation tests were run with varying conditions to arrive at a flowsheet involving up to 6 stages of cleaning and regrinding.

Tests BF1379 and BF1380 were run using optimised conditions with the results obtained summarised in Table 7. The product size distribution and assays are shown in Table 8. Test BF1396 was conducted

using a similar regime except for further grinding, to investigate if the graphite grades could be further increased.

Table 7: Final Master Composite Flotation Results

Test Number	Combined Cleaner Concentrate (1)						
	Final PSD P_{80} (µm)	Overall TGC		TGC +150 µm		TGC-150 µm	
		% Grade	% Rec.	% Grade	% Dist'n.	% Grade	% Dist'n
BF1379/80(1)	303	96.0	93.2	95.7	59.0	96.5	41.0
BF1396	195	98.1	86.8	97.9	32.1	98.2	67.9

(1) Results averaged from 2 tests (BF1379 and BF1380).

Table 8: Cleaner Concentrate Grade and Size Distribution

Flake Size	(microns)	Mesh	Master Composite			
			Test BF1379/80		Test BF1396	
			Mass (%)	TGC (%)	Mass (%)	TGC (%)
Super Jumbo	> 500	38	2.8	95.8	0.45	98.5
Jumbo	300 – 500	50	17.3	96.1	4.48	98.1
Large	180 – 300	+80 -50	29.8	95.6	17.2	98.0
Medium	150 – 180	+100 -80	9.1	95.0	10.0	97.6
Small	-150+75	+200-100	23.6	96.8	32.4	98.5
Fine	< 75	-100	17.4	96.1	35.5	97.9

1.6 Summary and Conclusions

Cleaner flotation testwork used multiple stage cleaning with polishing rod and/or stirred attrition mill prior to each cleaner step. This produced final graphite concentrates at the target grade of TGC>95% and >90% graphite recovery and whilst maintaining a favourable coarse PSD.

Initial optimisation testwork demonstrated high graphite recovery to high grade coarse concentrates can be achieved using separate coarse and fine flotation streams.

Further samples were being planned to allow additional testwork for downstream testwork including:

- Purification and expandability testwork
- Thickener tests on concentrates and tails
- Filtration on concentrates
- Tailings for Geochemistry and Geotech.

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	Commentary
Sampling techniques	**Drilling** • the drill hole database only consists of diamond drill holes • sampling consists of 2m composite samples of quarter core with breaks at lithological discontinuities - typical 3-5Kg • samples are cut using a diamond blade core saw • duplicate samples are collected every 20th sample for QAQC purposes • standards (CRMs) are inserted every 20th sample for QAQC purposes • sampling is considered to be comprehensive and representative • quarter cores are sent for analysis, the remaining core material is retained and stored in BEM's secure core shed • metallurgical samples were obtained from diamond drilling using ½ cores. A split of crushed sample was used for metallurgical test work • downstream testwork will be based on a split sample taken from concentrate produced in metallurgical testwork bulk run completed in September 2019 • The bulk concentrate sample split was further mixed and split in to sub samples for additional test work including sample BE L7 **Trenching** • trenches are dug perpendicular to the strike of mineralised units with a JCB backhoe loader • trained geologists log and systematically sample the trenches using a rock hammer at 2m intervals • CRMs are inserted ~every 20th samples for QAQC purposes
Drilling techniques	• diamond drilling only • core size is HQ and NQ typically in 0.5-1.5m runs • core from a select number of drill holes are orientated
Drill sample recovery	• core recovery is routinely recorded every metre by trained geologists • no bias or relationship has been observed between recovery and grade • recovery is typically +80% within weathered rock, and +95% in fresh rock
Logging	**Drilling** • all drill holes are logged by qualified and experienced geologists • logging includes descriptions of geotechnical, mineralisation, structural and lithological aspects of the core and is digitally recorded using an industry standard code system • cores are systematically photographed • the data collected offers sufficient detail for the purpose of interpretation and further studies **Trenching** • all trenches are logged by qualified and experienced geologists • logging includes descriptions of mineralisation, structural and lithological aspects of the encountered rocks and is digitally recorded using an industry standard code system • the data collected offers sufficient detail for the purpose of interpretation and further studies

Criteria	Commentary
Sub-sampling techniques and sample preparation	**Drilling** • quarter cores are cut using a diamond core saw and collected for assay • 2 metre composite sampling is deemed to be comprehensive and representative for the style/type of mineralisation under investigation • duplicate samples are taken (remaining quarter core) every 20th sample • sample preparation from quarter core to pulp is undertaken at BEM's sample preparation facility in Antananarivo (former Intertek-Genalysis facility) **Trenching** • the base of the trench is chipped to obtain a representative sample over 2m intervals. Although the sampling technique is not ideal, the technique is deemed satisfactory for this exploratory phase of work • QAQC measured are deemed satisfactory for this type of sampling and exploratory phase of work • the sample size (3kg) is deemed satisfactory to the grain size of the material being sampled • sample preparation from 3Kg chip sample to pulp is undertaken at BEM's sample preparation facility in Antananarivo

Quality of assay data and laboratory tests	• assaying is undertaken by Intertek Genalysis in Perth (Aus)
	• samples are pulverised to 75 microns, roasted to 420°C and digested with a weak acid. Final analysis is undertaken by CS analyser (Code: C73/CSA)
	• standards and duplicates (duplicates only for core, not for trench samples) are inserted every 20th sample by the BEM technical team in addition to the internal QAQC from the laboratory. No issues been observed with QAQC
	• metallurgical work was undertaken by BGRIMM technology group China managed by BatteryLimits Pty Ltd
	• metallurgical work was undertaken by ALS Metallurgy Perth, managed by BatteryLimits Pty Ltd to produce additional concentrates for further testing
	• metallurgical results regarding the generation of concentrate for further testing were reported in December 2018
	• graphite concentrate downstream metallurgical testwork was completed by Dorfner ANZAPLAN – Germany and managed by BatteryLimits Pty Ltd. The testwork included;
	  ○ Chemical and Physical characterisation;
	  ○ Micronisation and Spherodization performance and characterisation;
	  ○ Purification of the Spherical Graphite produced; and
	  ○ Electrochemical characterisation of the Spherical Purified Graphite
	• Industry standard analytical techniques have been employed.

Verification of sampling and assaying	• significant intersections have been verified by alternative company personnel • no twin holes have been completed • all data is recorded digitally using a standard logging system and files are stored in an industry standard database
Location of data points	**Drilling** • Razafy: all collars have been located using a DGPS (accurate to 1cm) Projection and grid systems used: UTM (WGS84 Z38S). The down hole azimuth and dip is recorded using a Magshot down hole instrument (accurate to 1deg) • Haja: topography and collar survey data is based on measurements taken on GPS handheld device **Trenching** • all XYZ surveying is collected using a handheld Garmin GPS accurate to ±4m

Criteria	Commentary
	• Projection and Grid system used: UTM (WGS84) Z38S
Data spacing and distribution	**Drilling** • the drill hole grid spacing is 100m along strike by 30m across strike at Razafy, and 50m across strike at Haja • the drill hole spacing allowed to follow the graphitic mineralisation outlines from section to section and down dip • samples have been composited to 2m length within the mineralised lenses interpreted to complete the statistical analysis, variography and estimation **Trenching** • the geologist in charge of the program systematically samples all visible mineralised units as well as the lithologies either side of these • this data is not thought to be appropriate for resource estimation purposes • no sample compositing has been applied.
Orientation of data in relation to geological structure	**Drilling** • the drilling grid matches the strike of the orebody • the orientation of the drilling is not expected to introduce sampling bias as drill holes intersect the mineralisation at a sufficient angle to the dip of the orebody, in addition, the mineralisation envelopes are interpreted in three-dimensions **Trenching** • the trenches are oriented perpendicular to the perceived orientation of the outcropping mineralisation, but since sampling is two-dimensional and not perpendicular to the dip of mineralisation, reported intercepts will be wider than the true width of the mineralised unit
Sample security	**Drilling** • samples are cut and sampled on site before being transported to BEM's sample preparation facility in Antananarivo • sample pulps are freighted by plane to Intertek Genalysis in Perth (Aus) for assaying • the remaining core samples are kept in a secure facility adjacent to BEM's offices in Antananarivo **Trenching** • samples are packaged and stored in secure storage from time of gathering to sample preparation
Audits or reviews	• sampling procedures has been reviewed by external auditors Sigma Blue Pty. Ltd. and OMNI GeoX Pty. Ltd, with site visits at the beginning of the programmes

Section 2 Reporting of Exploration Results

(Criteria listed in section 1 also apply to this section.)

Criteria	Commentary
Mineral tenement and land tenure status	• work was undertaken upon permits 5391, 5393, 5394, 25094, 25605, 39751 • the tenements are located within the inland South West of Madagascar

Criteria	Commentary
	• tenements are held 100% by BlackEarth Madagascar SARL, a wholly owned subsidiary of BlackEarth Minerals NL through Madagascar Graphite Ltd • no overriding royalties are in place • there is no native title agreement required • tenure does not coincide with any historical sites or national parkland • tenements are currently secure and in good standing
Exploration done by other parties	• regional mapping by BRGM • historical diamond drilling and trenching by Malagasy Minerals. Ltd. (2014-2016)
Geology	The project overlies a prominent 20km wide zone consisting of a folded assemblage of graphite and quartz-feldspar schists, quartzite and marble units, with lesser intercalated amphibolite and leucogneiss. This zone, termed the Ampanihy Belt is a core component of the Neoproterozoic Graphite System. The belt is interpreted as a ductile shear zone accreted from rocks of volcanic and sedimentary origins
Drillhole Information	refer to Section 1
Data aggregation methods	• cut offs of 5%, 10% 15% and 20% graphitic carbon have been used for aggregated reported intercepts • no cutting of high grades is applied • all trench samples represent a 2m interval length • metallurgical samples were composited across sample intervals interpreted to be geological units. A master composite was compiled for the bulk testwork program to be representative of the modelled orebody
Relationship between mineralisation widths and intercept lengths	• sampling does not occur perpendicular to the dip of mineralisation and therefore is not truly representative of the true width of the mineralised unit • the dip of the mineralised units is known from previous drilling and/or the trenching logging • the dip of the mineralised unit is shown within the diagrams
Diagrams	refer to body of text above for diagrams and tabulated intercepts when applicable
Balanced reporting	• all significant results that are material to the project have been reported • any data that has not been released has been deemed insignificant
Other substantive exploration data	no other exploration related data has been collected that requires reporting
Further work	• future exploration work at Maniry is likely to include further mapping, trenching and drilling Additional downstream processing including optimisation of purification of spheronised graphite products for Li-ion battery anodes. This will be followed by additional electrochemical cell testing to examine the purified, spheronised material's performance. • additional downstream testwork will also include amenability for expandables, and high-end refractory markets • large scale bulk sample run is further planned

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	Commentary
Database integrity	• the drill hole database has been loaded in an industry standard database • validation for duplicates, missing data, outliers, erroneous intervals is completed before proceeding to the interpretation and analysis
Site visits	• Annick Manfrino, Competent Person for the resource estimate visited the site during the drilling programme in March-April 2018 • drilling, sampling and sample preparation procedures were reviewed and are considered of industry standard
Geological interpretation	**Razafy** • the confidence in the geological interpretation of the graphitic lenses is considered robust for the purpose of estimating and reporting Indicated and Inferred resource • graphite mineralisation hosted within graphitic schists and gneiss, visibly recognizable from the background rock • the complete extent of the two main lenses outcrop and can be followed by surface mapping • trenches have been used with success in early exploration stages to confirm the strike continuity • no major faulting or other structural disruption has been mapped in the deposit area and the location of the drilling intercepts of the graphitic mineralisation confirms the position of the lenses anticipated from the trenches observations • the boundary between graphitic schists and gneiss and the surrounding material is usually sharp with TGC below 0.5% in the background material changing to +3% grades in the graphitic lenses, leaving few options to shift the boundaries position when interpreting the mineralised body • mineralisation envelopes were interpreted at a nominal +3% TGC cut-off grade • only rare occurrences of non-mineralised material are included in the two main lenses • logged graphitic rich zones correspond extremely well with TGC assay results • no alternative interpretation has been considered at present • the weathered horizon (oxide) can easily be interpreted from the sulphur depression observed in the assay data. The oxide horizon is approximately 20m thick. The transition zone is usually of very limited thickness when present **Haja** • the confidence in the geological interpretation of the graphitic lenses at Haja is considered robust for the purpose of estimating and reporting a resource of the Inferred category • graphite mineralisation hosted within graphitic schists and gneiss, visibly recognizable from the background rock • the complete extent of the Haja lenses outcrop and can be followed by surface mapping • trenches have been used with success in early exploration stages to confirm the strike continuity • no major faulting or other structural disruption has been mapped in the deposit area and the location of the drilling intercepts of the graphitic mineralisation confirms the position of the lenses anticipated from the trenches observations • the boundary between graphitic schists and gneiss and the surrounding material is usually sharp with TGC below 0.5% in the background material changing to +1.5% grades in the graphitic lenses, leaving few options to shift the boundaries position when interpreting the mineralised body • mineralisation envelopes were interpreted at a nominal +1.5% TGC cut-off grade • the Haja orebody is composed of three adjacent parallel lenses dipping 25° to the east which often coalesce into a single body

Criteria	Commentary
	• logged graphitic rich zones correspond extremely well with TGC assay results • no alternative interpretation has been considered at present • the base of the weathered horizons- oxide & transition- can be interpreted from the sharp change in sulphur grades
Dimensions	**Razafy** • the Mineral Resource encompasses the Razafy deposit and a new prospect named Razafy East • the Razafy deposit comprises two major lenses – East Main d West Main lenses-, and four minor lenses adjacent to the main zone • the solids interpreting the two main zones are 1450m long with a maximum plan width of 65m for the East main lens, and 60m for the West main lens in the south part of the deposit • the two main lenses extend 155m depth below surface and define the lowest depth below surface at which a resource has been estimated • the Razafy block model extents 1625m along strike, 900m across strike and 200m depth to cover the East Razafy prospect area **Haja** • the resource model is based on six fences of drill holes 100m apart with drill holes separated by 50m on section • the Haja resource model cover the volume occupied by the Haja orebody and extents 725m north-south, 550m east-west and 210m at depth • the solids interpreting the Haja graphitic orebody extents 630m north-south, 500m east-west and 170m vertically
Estimation and modelling techniques	**Razafy** • TGC and sulphur have been estimated by ordinary kriging using 140m along strike by 50m down dip by 12m across strike search ellipse which defines the outmost distances to which blocks can be extrapolated from drill holes • drill sections are spaced regularly at a 100m (with the exception of the first northern section which is 200m away from the second section), with dril lholes spaced at 30m across sections • kriging parameters for both TGC and sulphur were obtained from modelling the directional variograms (normal variograms) for the two main lenses • nugget values are 20% of the total sill for both elements • the grade estimation was completed using Geovia GEMS mining software with partial blocks to honour the volume of the grade envelope solids • the block model is based on 25m along strike by 5m across strike by 5m Z, which is considered adequate given the current drill spacing of 100m section lines by 30m spacing • mineralised envelopes were used as hard boundaries during interpolation • the base of oxide was used as a hard boundary for the sulphur estimation but as a soft boundary for the TGC estimation • no top-cut measure was used as there is no evidence of outliers. The maximum TGC value for the 2m sample assays is 15% • the grade estimates -TGC & sulphur- were validated visually and statistically and honour spatially and statistically the input data • no previous estimate exists for this deposit **Haja** • TGC and sulphur have been estimated by ordinary kriging using Geovia GEMS mining software • mineralised envelopes were used as hard boundaries for the TGC during the interpolation • oxidation zones were used as hard boundaries for the interpolation of Sulphur

Criteria	Commentary
	• no top-cut was used for TGC but the influence of grades above 6.5% TGC was limited to 70mx70mx6m during interpolation. The 6.5% TGC grade corresponds to a statistical change in the data distribution. The maximum TGC value is 11.45% • no top-cut measure was used for sulphur • the grade estimates -TGC & sulphur- were validated visually and statistically and honour spatially and statistically the input data • no previous estimate exists for this deposit
Moisture	• the resource is reported for Razafy and Haja on a dry tonnage basis
Cut-off parameters	• the resource is reported for Razafy at a 6% TGC cut-off grade and a 5% TGC cut-off grade for Haja. These cutoff grades are in line with other reported Mineral Resources in East Africa • a Scoping Study has been completed on Razafy – refer to this study for cut-off grade calculations • no mining studies have been completed to date for Haja and cut-off grade calculations are not available
Mining factors or assumptions	• based on the orientation, thickness and depth to which the graphitic lenses have been modeled and their estimated TGC, the potential mining method is considered to be open pit mining for both deposits
Metallurgical factors or assumptions	**Razafy** • metallurgical testwork program has been undertaken on drill core samples taken from a drill program completed in 2018. A total of 20 diamond drill holes were sampled, to create representative composite samples • sample preparation was undertaken by ALS Metallurgy in Perth WA, managed by BatteryLimits • sub samples (2x 1 kg) were issued to BGRIMM technology group for initial confirmatory flotation testwork. The samples were stage ground in a rod mill to 100% passing 1mm. The samples underwent rougher flotation and up to 6 stages of regrind polishing and 9 stages of cleaner flotation. multiple stages of cleaning (up to 6), with recleaning. The results indicated that high grade (94% TGC) concentrates can be produced at a recovery of 87% in open circuit **Haja** • in accordance with Clause 49 of the JORC code (2012), the product specifications and general product marketability were considered to support the Mineral Resource Estimate for Industrial Minerals • independent preliminary flotation testwork completed by ALS Global Laboratory (Perth, WA) on three composites are reported in previous announcements and shows that: ○ 16% to 37% in overall weight of concentrate is of large or greater flake size category (+ 180 micron) at a concentrate grade above 97% TGC ○ overall concentrate grades range from 93.6% to 95.6% TGC
Environmental factors or assumptions	• it is assumed that the processing of ore will have minimal environmental impact. This is based upon other graphite processing operations and basic assumptions on how graphite ore will be processed at Maniry
Bulk density	**Razafy** • the bulk density used to report the Razafy Mineral Resource is based on 19 measurements made by the water displacement method by the Intertek Perth laboratory • a 2.07t/m^3 value was used for the oxide material and 2.17t/m^3 for the fresh material **Haja** • the bulk density data used to report the resource comprises 56 measurements made by caliper method on competent fresh core drilled during the 2018 BEM's drilling campaign

Criteria	Commentary
	which cover the depth and extent of the deposit. The data has been averaged in 20m vertical slices, and corresponding values assigned to the block model range from 2.05 m/t^3 in the weathered material to a maximum of 2.69 m/t^3 at the lowest depth. The average density of the resource reported is 2.20m/t^3
Classification	**Razafy** • the two main lenses are continuous over the strike of the deposit. They can be followed on surface by mapping without interruption and are not disrupted by faulting • trenching completed during the early exploration stages, but not used in the resource estimate, confirm the location at surface of the thickness of the mineralisation estimated by the model • with a 100m drill section spacing and search ellipse of 140mx50mx12m, extrapolation of blocks is limited • all minor lenses, including the East Razafy prospect have been classified as Inferred material • for the East and West main lenses, the kriging slope of regression obtained for the TGC estimate was used to separate Indicated from Inferred resource at depth. Blocks with a slope of regression greater than 0.5 were classified as Indicated, the other blocks were classified as Inferred • the classification is based on a high degree of geological understanding of the mineralisation occurrence and spatial distribution, correlated by systematic drilling information with limited extrapolation • the Mineral Resource estimate appropriately reflects the view of the Competent Person **Haja** • the Haja lenses are continuous over the length of the deposit drilled • the mineralisation can be followed at surface from mapping and with the trenches available. Graphitic mineralisation is easily visually distinguished from the surrounding background rock from its colour and the presence of visible graphitic flakes • the trenches completed during the early exploration stages, but not used in the resource estimate, confirm the location at surface of the thickness of the mineralisation estimated by the model • at either strike end of the deposit, extrapolation has been limited by the wireframed envelopes which were extended 50m from the first and last drill hole fences • downdip, the mineralisation was extrapolated no more than 70m from the last drill hole intercepts on which the wireframes are based • all material inside the wireframe envelopes within the ranges detailed above has been classified as inferred material • the classification of the resource estimate appropriately reflects the view of the Competent Person
Audits or reviews	• no audit nor review were undertaken for the Razafy and Haja Mineral Resource estimates

Criteria	Commentary
Discussion of relative accuracy/ confidence	• the relative accuracy of the Mineral Resource estimates is reflected in the reporting of the resources as per the guidelines of the JORC Code 2012 edition • no other estimation method or geostatistical assessment has been performed • the Mineral Resource estimates of the Razafy and Haja deposits are global estimates of tonnes and grades • tonnages and grades above the nominated cut-off grades applied on TGC are provided in the body of the announcement • the contained graphite values were calculated by multiplying the TGC grades (%) by the estimated tonnage on a block by block basis • no production data is available to reconcile results with.