

ASX Announcement

Increase in Montepuez Graphite Reserve

Result further underpins strategy to produce 50,000tpa of graphite concentrate for EBITDA of US\$30M per year¹

Highlights

- Reserves of contained graphite at Montepuez project increase ~10% to 3.9Mt from January 2017 estimate
- Ore Reserves at Montepuez now 42.2Mt at 9.3% Total Graphitic Carbon (TGC) 2
- Increased Ore Reserve demonstrates the financial and technical strengths of the Montepuez Graphite Project
- Key Montepuez operating parameters:

Mine life at production rate of 50ktpa is +50 years at 11.0% TGC

Average C1 Cost for the first 10 years USD \$360.9/t

Current BMI basket price for 96% TGC concentrate is USD\$1,064/t 1

Project CAPEX remaining USD \$39.5M

Waste to ore strip ratio 0.8

Battery Minerals Limited ("the Company"; ASX: BAT) is pleased to announce a significant increase in Ore Reserves at its Montepuez Graphite Project in Mozambique.

The new Montepuez Ore Reserve is 42.2Mt at 9.3% TGC for 3.9Mt of graphite. This increased Ore Reserve compares with the 41.4Mt at 8.8% TGC for 3.6Mt of graphite reported in January 2017.

Battery Minerals Managing Director David Flanagan said the increased Ore Reserve again demonstrated the financial and technical strengths of the Montepuez Graphite Project.

"We have a long mine life and ample scope to increase production beyond stage one," Mr Flanagan said.

"The remaining capital cost to bring Montepuez into production is just US\$39.5 million. We have the required environmental approvals, offtake agreements, a port allocation, a completed tailings dam wall and we have built a new mine village. This is a terrific project that is well advanced and on the way to cashflow.

"Montepuez will generate EBITDA of US\$30 million a year at current prices and that's before taking into account any expansions.

Based on the 31 October 2018 Benchmark Mineral Intelligence (BMI) FOB China graphite prices (spot prices), the basket price of Montepuez 96% TGC graphite concentrate is US\$1,064.63/t.

^{2.} See page 3 for detailed breakdown by classification



"And the independent forecaster, BMI, is predicting the graphite price will be more than US\$100 a tonne higher than assumed in our earnings forecasts."

These updated Ore Reserve estimates form the basis of the Montepuez Graphite Project implementation mine plan outlined in this announcement.

The updated Ore Reserve was estimated by independent consultants; Snowden Mining Industry Consultants Pty Ltd (Snowden).



Figure 1. Location map showing the Montepuez Graphite Project in the Province of Cabo Delgado in northern Mozambique.



Montepuez Graphite Project: Buffalo and Elephant Ore Reserve Classification and Estimation

The Probable Ore Reserve for the Buffalo and Elephant deposits was estimated to be 42.2Mt at 9.3% TGC for 3.9Mt of graphite. The Ore Reserve comprises of the following mineral inventories;

- Weathered ore: 5.98Mt @ 8.34% TGC for 0.5Mt contained graphite.
- Fresh ore: 36.2Mt @ 9.4% TGC for 3.4Mt contained graphite.

The Ore Reserve estimate is summarised in the table below.

Montepuez Graphite Project November 2018 Ore Reserve Estimate

Deposit	Ore type	Class	Ore (Mt)	TGC (%)
	Weathered	Probable	3.58	8.31
Buffalo	Fresh	Probable	16.80	10.06
	Subtotal	Probable	20.38	9.75
	Weathered	Probable	2.41	8.39
Elephant	Fresh	Probable	19.41	8.87
	Subtotal	Probable	21.82	8.82
	Weathered	Probable	5.98	8.34
TOTAL	Fresh	Probable	36.21	9.42
	TOTAL	Probable	42.19	9.27

Notes:

- The Ore Reserve estimate was compiled under the supervision of Mr Jon Hudson who is an employee of Snowden Mining Industry Consultants and a Fellow of the South African Institute of Mining And Metallurgy. Mr Hudson has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code.
- The Ore Reserve was estimated above a cut-off of 3.4% TGC for weathered and 4.3% TGC for fresh.
- All Ore Reserve tonnes have been rounded to the nearest 10,000 tonnes and grade to the nearest 0.01.
- The Ore Reserve estimate includes small amounts of Inferred material in the form of mining edge dilution.

Montepuez Graphite Project CAPEX

The total estimated pre-production establishment capital cost for the project is US\$52.6M, including contingency, as summarised in table below:

Area	Total Capex USD\$	Spent to Date USD\$	Remaining
Alea	υουφ	Date USDS	Capex USD\$
Process Plant and Power	28,129,000	4,160,000	23,969,000
Mining Equipment and Light Vehicles	4,378,000	72,000	4,306,000
Camp infrastructure and fit-out	3,108,000	3,108,000	0
Earthworks, Tailings Storage Facility and			
Water Storage	3,834,000	3,491,000	343,000
Buildings, officers and workshops	1,814,000	62,300	1,751,700
Owners costs	4,747,000	1,772,000	2,975,000
Pre-production Costs	4,926,000	47,000	4,879,000
Freight	1,672,000	389,000	1,283,000
Total	52,608,000	13,101,300	39,506,700



Montepuez Graphite Project OPEX

The average operating cost summary (average blended ore) for the project is detailed below FOB Pemba:

OPEX for years 1 to 10	USD\$ pa	USD\$/t conc
Mining	5,129,000	102.9
Processing	5,692,000	114.3
General and Administrative	2,545,000	30.7
Logistics	3,082,000	51.1
Maintenance	1,532,000	61.9
Total C1 cost	17,980,000	360.9

Notes:

Montepuez Graphite Project Flake Size Classification

The Ore Reserve update and associated mine plan has had a positive impact on the Montepuez flake size classification. This relates to the inclusion of an increased quantity of fresh material, which contains a higher proportion of +150 micron flake.

Based on the 31 October 2018 BMI FOB China graphite prices, the basket price of Montepuez 96% TGC graphite concentrate has increased from US\$952/t to \$1,065/t. The life of mine flake graphite concentrate sizing is summarised below:

Montepuez Graphite Project Life of Mine (LOM) Flake Size Distribution

Montepuez – LOM Flake Graphite Concentrate Sizing				
Flake size	Flake size (mesh)	Flake size (micron)	% of concentrate	TGC grade
Fine	-100 Mesh	0 - 150	57.1%	96%
Medium	+100 Mesh	+150 -180	11.3%	96%
Large	+80 Mesh	+180 -300	20.7%	96%
Jumbo	+50 Mesh	+300	11.0%	96%

Montepuez Graphite Project Average Product Flake Size Classification

	Weathered	Fresh
Sieve Size (µm)	% in Interval	% in Interval
>300	5.9	11.6
180	3.5	22.5
150	13.6	11.0
-150	77.0	54.9

Mining Methods and Parameters

The mine plan was determined from economic mining limits for each deposit using Whittle optimization software. A mining schedule was developed based on practical open cast, mining of the Elephant and Buffalo pit designs. The mining rate was determined based on the processing plant target production of 50 ktpa of TGC concentrate at 96% TGC and practical mining constraints. A 75% ramp-up was applied in the first year. The mine schedule includes for overburden removal and mining road infrastructure. Montepuez Stage 1 plant throughput rate will average 0.5Mtpa producing

¹⁾ Above table excludes Government Royalties.

²⁾ Above table based on average blended ore of 50,000 tpa TGC production rate and ~1.4Mtpa mined and process run of mine (ROM) ore at an average rate of ~500,000tpa at 12% TGC



~50,000tpa of +96% TGC graphite concentrate. To enhance early cashflow, the target feed grade to the plant will average 12% TGC.

The Mineral Resource to Ore Reserve conversion is 90% for Buffalo and 67% for Elephant based on contained graphite.

The cut-off grade was determined through the application of project unit operating costs and recoveries. The recoveries were determined by deposit scale geometallurgical assessment of samples representative of the variable lithology types, oxidation and TGC% grade ranges, completed by the Company. The Ore Reserve cut-off grades were calculated to range between 3.4% TGC and 4.3% TGC depending on deposit and weathering classification.

Pit designs were based on Whittle pit optimisations for each deposit considering project specific unit costs, prices, recoveries and geotechnical inputs. The pit optimisations were constrained within the limits of the Measured and Indicated Resources for each deposit. The current design for the Buffalo pit extends to a depth of approximately 132m, whilst the current design for Elephant pit extends to a depth of approximately 135m.

Each pit will have a single waste dump, located to the east of each excavation. Pit ramps will be orientated to ensure that both ore and waste haulage distances are minimized. Long-term ore stockpiles will be located between each pit and the ROM pad.

Metallurgical Methods and Parameters

Flowsheet development and locked cycle metallurgical testwork, conducted at the Beijing General Institute of Mining and Metallurgy – Technology Group (BGRIMM), formed the basis of the Montepuez Graphite project implementation flowsheet.

Key difference to the Definitive Feasibility Study (DFS) flowsheet include;

- Additional flotation and polishing mills included in the flowsheet to mitigate grade and recovery risks
- Processing and recovery of the full flake size fraction, DFS excluded the -38 micron fraction
- Sustainable product grades of +96% TGC achieved

Summary table of Buffalo, Elephant and Fresh and Weathered samples with graphite % recovery and concentrate % TGC derived from the DFS and BGRIMM Testwork

Source	DFS Weathered ore recovery	Plant Flowsheet Weathered ore recovery	Concentrate Grade % TGC
Buffalo	73.1%	89.3%	96
Elephant	62.6%	87.9%	96

On the basis of testwork completed to date, the retention of the -38 micron fraction and the improvements applied to the flowsheet, the Company has a strong basis to forecast graphite recovery of 80% in the weathered material and 85% recovery in fresh material.

The Product Size Distribution (PSD) for the Elephant and Buffalo material determined by test work on the Montepuez 96% concentrate sample at BGRIMM is summarized below.





Figure 2. Montepuez Graphite Project: Mine & Processing Site Layout.

Summary of PSD for Buffalo and Elephant weathered deposits determined by BGRIMM locked cycle testwork

Description	Sieve Size (µm)	Elephant Average PSD % per Fraction	Buffalo Average PSD % per Fraction	Weathered Average PSD % per Fraction
	300	5.53	6.27	5.90
Concentrate	180	4.12	2.79	3.46
Concentrate	150	13.07	14.27	13.67
	-150	77.3	76.7	77.0

The Fresh ore PSDs and recoveries were reassessed based on the new Montepuez Graphite Project flowsheet and following criteria;

- Performance of the weathered material in the new flowsheet
- the DFS ALS and subsequent -150micron upgrade testwork
- DFS mass balance splits of the fresh ore.



Montepuez Graphite Project Summary of PSD for Fresh ore determined by BGRIMM locked cycle testwork

Description	Sieve Size (µm)	Fresh Average PSD % per Fraction
	300	11.6
Concentrate	180	22.5
Concentrate	150	11.0
	-150	54.9

The average recoveries of from ALS testwork for a fresh composite and fresh Buffalo sample was 86.6% TGC. For the Ore Reserve and Montepuez modelling a recovery of 85% TGC has been applied. Planned fresh ore locked cycle testwork in the design process flowsheet is expected to validate or improve these results.

Market Flake Size Pricing

Benchmark Minerals Intelligence's independent real, annual pricing forecast have been applied to the Montepuez production profile for a +96% TGC. This has resulted in a LOM and first 10 years of production average CIF China basket price of USD1,400/t and USD\$1,270/t respectively. Shipping costs of USD \$95/t of product to China are anticipated and included as costs in the economic assessments.

The basis of the product pricing was determined by an independent forecast of graphite flake market prepared for Battery Minerals Limited by Benchmark Mineral Intelligence (BMI), an independent publishing business focused on critical mineral supply chains particularly minerals applied to new technologies. The pricing was CIF China.

Background Information on Battery Minerals

Battery Minerals Limited ("Battery Minerals") is an ASX listed Australian company with two world-class graphite deposits in Mozambique, being Montepuez and Balama Central. Battery Minerals has produced high quality graphite flake concentrate at multiple laboratories. Subject to completing project financing, Battery Minerals intends to commence graphite flake concentrate production from its Montepuez Graphite Project at rates of ~50,000tpa at an average flake concentrate grade of 96% TGC.

In December 2017 and January 2018, Battery Minerals signed four binding offtake agreements for up to 41,000tpa of graphite concentrate, representing over 80% of Montepuez's forecast annual production. In H1 FY2018, the Mozambican Government has granted Battery Minerals a Mining Licence and it has also approved the Company's EIA for the Montepuez Graphite Project.

As Battery Minerals executes subsequent expansions, subject to the completion of all necessary studies, permits, construction, financing arrangements, infrastructure access, it expects production to grow to over 100,000 tonnes per annum graphite flake concentrate from its Montepuez Graphite Project.





Figure 3: Tailings Storage Facility wall complete



Figure 4: Camp accommodation complete



Battery Minerals has also announced a scoping study on its Balama Central project, which comprises a Stage 1 production rate of 55,000tpa (B1). A final feasibility study on the Balama Central Graphite Project is expected to be released in the December 2018 Quarter.

Combined with the Montepuez Graphite Project and subject to continued positive economic, social and technical investigations, Balama Central provides scope for self-funded growth from a ~50,000tpa production-rate to at least 150,000tpa. (See ASX announcements dated 1st March 2018 and 29 March 2018 for full details, Scoping Study Cautionary Statement and Competent Persons statement on the Balama Central Graphite Project Scoping Study and Balama Central Resource Upgrade. All material assumptions underpinning the production target (as disclosed in these previous announcements) continue to apply and have not materially changed).

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Competent Person's Statement - Mineral Resources

Battery Minerals Limited announced updated Mineral Resources for the Montepuez Graphite Project on 18 October 2018. This included the following competent person statement "The Statement of Estimates of Mineral Resources has been compiled by Mr. Shaun Searle who is a Member of the AIG. Mr. Searle has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code (2012). Mr Searle is a director of Ashmore Advisory Pty Ltd; an independent consultant to Battery Minerals Limited. Mr Searle consents to the inclusion in the report of the matters based on his information in the form and context in which it appears." At the date of this announcement, Mr Searle has not withdrawn his consent.

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Competent Person's Statement - Ore Reserves

The information in this announcement that relates to the Ore Reserves at Montepuez is based on information reviewed or work undertaken by Mr Jon Hudson, FSAIMM, and an employee of Snowden Mining Industry Consultants. Mr Hudson has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the preparation of mining studies to qualify as a Competent Person as defined by the JORC Code 2012. Mr Hudson consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

Important Notice

This ASX Announcement does not constitute an offer to acquire or sell or a solicitation of an offer to sell or purchase any securities in any jurisdiction. In particular, this ASX Announcement does not constitute an offer, solicitation or sale to any U.S. person or in the United States or any state or jurisdiction in which such an offer, tender offer, solicitation or sale would be unlawful. The securities referred to herein have not been and will not be registered under the United States Securities Act of 1933, as amended (the "Securities Act"), and neither such securities nor any interest or participation therein may not be offered, or sold, pledged or otherwise transferred, directly or indirectly, in the United States or to any U.S. person absent registration or an available exemption from, or a transaction not subject to, registration under the United States Securities Act of 1933.

Forward Looking Statements

Statements and material contained in this document, particularly those regarding possible or assumed future performance, resources or potential growth of Battery Minerals Limited, industry growth or other trend projections are, or may be, forward looking statements. Such statements relate to future events and expectations and, as such, involve known and unknown risks and uncertainties. Such forecasts and information are not a guarantee of future performance and involve unknown risk and uncertainties, as well as other factors, many of which are beyond the control of Battery Minerals Limited. Information in this presentation has already been reported to the ASX.

All references to future production and production & shipping targets and port access made in relation to Battery Minerals are subject to the completion of all necessary feasibility studies, permit applications, construction, financing arrangements, port access and execution of infrastructure-related agreements. Where such a reference is made, it should be read subject to this paragraph and in conjunction with further information about the Mineral Resources and Ore Reserves, as well as the relevant competent persons' statements.

Definitive Feasibility Study completed in February 2017 and Value Engineering Study completed in October 2017

Note: The information in this announcement is an update to the Definitive Feasibility Study (DFS) completed in February 2017 and the Value Engineering Study (VES) completed in October 2017. For full details on the DFS and VES see ASX announcements dated 15 February 2017 entitled "Battery anode PFS and Montepuez Graphite Project DFS" and 18 October 2017 entitled "Restructure of Montepuez will revolutionise economics" respectively

JORC Code, 2012 Edition Table 1 Section 4 Montepuez Graphite Project

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	 Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve. Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves. 	The November 2018 Ore Reserves was compiled by Snowden is based on an updated Mineral Resource for Buffalo in October 2018, compiled by Ashmore Advisory ("Ashmore") and the July 2018 Mineral Resource estimate for the Elephant deposit prepared by Runge Pincock Minarco ("RPM"). Please refer "Group Resources Update" lodged with ASX dated 18 th October 2018 as well as "Resource Increase at Montepuez Graphite Project" lodged with the ASX dated 16 th July 2018 for additional information pertaining to table 1 sections 1,2 and 3. See previous ASX announcement dated 18 October 2018. The Mineral Resource estimates for Buffalo and Elephant were created using Ordinary Kriging for Total Graphitic Carbon TGC%, CaO%, LOI%, S% and V ₂ O ₅ %. Density domains were based on lithology and weathering, which was estimated on a domain by domain basis. The Lion Deposit was not included in the Ore Reserves due to its remote locality in relation to the plant infrastructure and small size of orebody compared to the Buffalo and Elephant deposits. Mr Jon Hudson is the Competent Person and has relied on the integrity and accuracy of the Mineral Resource estimates for the Ore Reserves.
Site visits	 Comment on any site visits undertaken by the Competent Person and the outcome of those visits. If no site visits have been undertaken indicate why this is the case. 	A site visit of the Montepuez project was undertaken by Mr Hudson on the 14th and 15th June 2018. The site visit involved a review of the following; Location and potential operating environment of the Buffalo, Elephant and Lion deposits Core viewing of pre-selected drill holes Elephant deposit EL010D EL018D Buffalo deposit MN017D Lion Deposit MN017D Location of the main infrastructure areas currently under construction; Processing Plant Tailings Storage Facility Long Term and ROM Ore Stockpiles Overburden Storage Area Water Storage Facility Permanent camp/ Accommodation village Access roads

Criteria	JORC Code explanation	Commentary
Study status	 The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves. The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered. 	The November 2018 mine plan and Ore Reserve estimate compiled by Snowden is a continuation of the VES objective
Cut-off parameters	The basis of the cut-off grade(s) or quality parameters applied.	 An economic mining envelope was determined by applying Whittle pit optimisation to the Indicated and Measured Mineral Resources using appropriate modifying factors. Marginal cut off grades (by weathering) were calculated based on all pre-tax costs associated with the processing and selling of a composite graphitic product containing 95% TGC which includes: Stockpile reclaiming Processing Road transport Ship loading Royalties General & Administration Product Pricing from BAT Sales prices for each product size fraction DFS contractor mining costs The process recoveries as outlined in the "Metallurgical factors or assumptions" section. A marginal cut-off grade was applied in scheduling from 3.8% TGC to 4.2% TGC for the weathered material and 3.3% TGC for the fresh material. For the pit optimisation, an elevated cut-off grade of 10% was applied to target an average grade of 12% for the first 20 years (approx.) of operations. Material with grades between the marginal cut-off and 10% TGC is stockpiled for processing at the end of the mining operation.
Mining factors of assumptions	 The method and assumptions used as reported in the Pre- 	 The proposed mining method is conventional open pit bulk mining for the Montepuez Graphite project. The mining cycle involves the following activities: Cleaning and soil stripping

Criteria JORC Code explanation Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design). The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including

etc.

 The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.

associated design issues

such as pre-strip, access,

- The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).
- The mining dilution factors used.
- The mining recovery factors used.
- Any minimum mining widths used.
- The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.
- The infrastructure requirements of the selected mining methods.

Commentary

- Drilling (if required/ free dig)
- Grade control sampling
- Blasting or ripping (if required)
- Excavation guidance
- Loading
- Hauling
- Tipping OSA and stockpiles
- Rehandle stockpiles and soils
- Rehabilitation
- Owner mining is considered, with contracted drill and blast services provided.
- The Saprolite and weathered Amphobolite material excavated during initial mining at the Buffalo and Elephant deposits is
 predicted to be amenable to free digging. It is likely that some harder layers of in-situ material will require moderate "paddock"
 blasting. Weathered waste will be used in construction of the RoM stockpile. Weathered and fresh rock may be used in
 construction of the Tailings Storage Facility (TSF).
- The mining operations will be supported by the following typical on-site infrastructure requirements;
 - Access roads within the Mining lease area for access between the various facilities
 - Haul roads to the RoM and Long term stockpiles and waste rock storage areas
 - Mine Services situated to the east of the plant to avoid dust from the RoM pad
 - Diesel Storage Facilities
 - Temporary and Permanent Workshop Facilities to maintain the mechanised mining equipment
- Separate grade control drilling is not planned. Grade control will be carried out using a combination of blast hole sampling and trench sampling.
- The pit will be dewatered in advance of mining via a combination of dewatering boreholes surrounding the pit and horizontal drains within the pit to collect residual seepage. The majority of groundwater flow toward the pit will originate from geological contact zones and faults.
- A geotechnical assessment of the pit slopes was conducted by Snowden in 2017 to a standard consistent with a DFS. The pit
 slope angles applied in the pit optimisation are shown in the table below. They include a 4 ^o adjustment to allow for pit ramps
 on all walls.
- Pit Slope Angles

Rock type	Buffalo	Elephant
Saprolite	38 ^O	42 ^O
Weathered	35-48 ^O	42-45 ^O
Fresh	45-48 ⁰	45-48 ^O

- The current design for the Buffalo pit extends to a depth of approximately 132m, whilst the current design for Elephant pit extends to a depth of approximately 135m deep.
- The economic mining envelope was determined using Whittle optimisation software. Only the Indicated and Measured Mineral Resource categories were used in the optimisation process. The Inferred and unclassified material were only included as dilution within the SMU.
- Given the bulk nature of the mineralisation, mining dilution was applied based on reblocking the Mineral Resource model from 2.5 mX by 50 mY by 2.5 mZ to an SMU size 5 mX by 5 mY by 5 mZ. This block size was determined after consideration of the size of the excavator bucket, and expanded to mimic the mixing associated with blasting and loading. Mineral Resource classifications were assigned on the basis of majority representation within the SMU block.

Criteria	JORC Code explanation	Commentary
		 The analysis indicates approximately 2% dilution for Buffalo and 3% dilution for Elephant. Within the mining envelope, the ore loss was estimated to about 2%. Practical pit designs were created based on the envelopes produced in the optimisation. The life of mine strip ratio was estimated to be approximately 0.79:1 (W:O) A minimum mining width of 15 m was allowed for in the designs based on the proposed mining fleet of 85 t excavator and 40 t articulated dump trucks. A one-month pre-strip was allowed for to prepare the mining operation for production. No other technical issues were identified to restrict accessing the Ore. The mining rate is based on the production of approximately 50 ktpa of graphite product from the onsite processing plant. The production schedule uses stockpiling of low and high grade weathered and fresh ore to maximize the high grade ore feed to the processing plant up front in the mine's life. The Buffalo and Elephant pits are mined out in 51 years with the current production schedule and the life of mine is 85 years. The mine designs were prepared by Snowden and reviewed by the Competent Person.
Metallurgical factors or assumptions	 The metallurgical process proposed and the appropriateness of that process to the style of mineralisation. Whether the metallurgical process is well-tested technology or novel in nature. The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining 	 The metallurgical process fits the mineralogy. The technology for processing is deemed well tested for this application. The DFS Metallurgical testwork and process and infrastructure design was conducted by ALS in Perth. A number of benchscale laboratory tests and two pilot scale tests on Montepuez ore material completed during the DFS. Recent testwork done as part of the VES study by Beijing General Research Institute of Mining and Metallurgy (BGRIMM) Technology Group in China on Elephant weathered ore material achieved TGC % recoveries in excess of 85% and concentrate grade 96% TGC. BAT propose to process the ore by crushing, grinding, flotation and screening to produce graphite concentrate of various flake sizes. The recoveries were determined by deposit scale geometallurgical assessment of samples representative of the variable lithology types, oxidation and TGC% grade ranges. The process plant will have varying recoveries based on source and weathering classification. The following recoveries were applied to produce a concentrate grade of 96% TGC.

Item	Saprolite / Weathered	Fresh
WEATH code	2, 3 & 4	0 & 1
TGC recovery (%) - Buffalo	80	85
TGC recovery (%) – Elephant	80	85

applied and the corresponding metallurgical recovery factors applied.
Any assumptions or allowances made for deleterious elements.

The existence of any bulk

sample or pilot scale test

defined by a specification, has the ore reserve estimation been based on

work and the degree to which such samples are considered representative of the orebody as a whole.

• For minerals that are

The product size distribution (PSD) of 96% concentrate varies within the deposits. Flake size distribution for certain Elephant
and Buffalo ore samples was determined by Actlabs (Canada) using mineralogical methods and this data was provided to
MVO by BAT was split between weathered and fresh ore

Criteria	JORC Code explanation	Commentary
Eminomonantal	the appropriate mineralogy to meet the specifications?	
Environmental	The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.	 No environmental fatal flaws have been identified for the Montepuez Graphite Project to prevent project development by the environmental consultant Coastal and Environmental Services ("CES"). Impacts related to the socio-economic environment are of moderate to low significance and are believed to be easily mitigated through careful planning and management. This is because the area is sparsely populated and very few people grow crops in the planned mine area. As a consequence, the area has a relatively high biodiversity and is well vegetated. The content of the DFS environmental section includes an outline of the Mozambique environmental approval process including legislation and international conventions. In terms of the project impacts; these are currently being compiled by CES and are addressed in the Environmental and Social Impact Assessment ("ESIA") and Environmental Management Program ("EMPr"). The stand-out risks include water management and Acid Mine Drainage ("AMD") potential with the Tailings Dam and the Long Term Ore Stockpile, flora and fauna impacts, population in-migration including changes to social systems and structured due to employment opportunities putting strain on local natural resources and public health and safety.
Infrastructure	The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.	 There is sufficient land within the lease boundary for the proposed development. The site raw water supply will require the construction of a 60 Ha WSF and a 240 Ha tailings management facility. Surface water runoff will be managed through the installation of drains, culverts and floodways which is critical for the rainy season Raw water will be supplied from the water storage facility ("WSF") which is filled up during the rainy season and is situated in close proximity to the processing plant. All waste water will be collected and pumped to a water treatment plant situated at the accommodation village. A new potable water treatment plant will be installed at the accommodation village linked to the WSF. BAT intends to construct a diesel fired power station to supply power for the plant and the accommodation village. Electrical power supply will be generated on site by six of 1.4MW high speed diesel generators for distribution. Buildings to support the mining and plant operations which include an accommodation village to house the employees and contractors. There is a sealed road from the port town of Pemba to Montepuez. There is a 60 km dirt road that leads from Montepuez to the project area. BAT proposes to upgrade and widen the dirt road to a safe operating standard and maintain it for the duration of the project. The standard of the proposed construction and ongoing maintenance will enable the road to cater for most weather conditions. Sufficient supplies will be maintained on site to ensure continuity of the project. Equipment and materials unavailable within Mozambique will be imported via the port of Pemba or transported by road from South Africa. Logistical assessments have not identified any major hindrances or obstacles along the transport route from site to Pemba.
Costs	 The derivation of, or assumptions made, regarding projected capital costs in the study. The methodology used to estimate operating costs. Allowances made for the content of deleterious elements. 	 The assumptions made regarding the project capital cost estimate was developed from budget quotes and estimates from vendors and third-party consultants for the various sized and designed items. The bulk of the quotations were provided by South African vendors or suppliers. An exchange rate of approximately 13.8 ZAR/USD was used. The project is currently in detailed design (73% complete). An average contingency of 5% was included in the estimate. To date US\$13.1M has been spent on early works. A breakdown of the main capital items is shown in the Table below.

Criteria	JORC Code explanation	Commentary			
	 The source of exchange rates used in the study. 		Area	Total US\$ millions	%
	 Derivation of transportation 	or	Earthworks	3.18	6.0%
	charges.The basis for forecasting or		Tailings Storage Facility	0.22	0.4%
	source of treatment and		Concrete	0.86	1.6%
	refining charges, penalties for failure to meet		Process Plant	17.33	32.9%
	specification, etc.		Detailed design	3.21	6.1%
	The allowances made for royalties payable, both Government and private.		Camp	3.11	5.9%
			Plant and Mine Buildings	1.81	3.4%
	Coroninioni ana piniate.		Water Storage	0.43	0.8%
			Power	2.24	4.3%
			Mining Fleet and Support	3.44	6.5%
			Light Vehicle Fleet	0.94	1.8%
			Owner's Costs	4.75	9.0%
			Logistics	1.67	3.2%
			SMP Installation Costs	4.49	8.5%
			Pre-Production Costs	4.93	9.4%
			TOTAL	52.61	100%
		 Mining operating costs 	s were estimated by Snowden bas	sed on its database	of operating co

- sts, fuel costs of US\$0.90/L (supplied by BAT) and benchmarked against contractor quotations.

 Processing operating costs and general and administrative costs were developed by BAT and were based on ground up
- Logistics costs were developed by BAT via quotations from Bollore and were based on ground up basis A breakdown of the operating costs for the life of mine is shown below

CATEGORY (LOM - 86 Years)	US\$/t product (life of mine)
Mining	80.7
Processing	216.4
General and Administrative	64.6
Logistics	61.9
Maintenance	14.8
TOTAL	438.4

Criteria

JORC Code explanation

Commentary

Revenue factors

- The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.
- The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and coproducts.
- The revenue price range per size fraction for Ore Reserve estimation was developed from an average of long-term CIF China
 forecasts from three reputable firms. These prices were reduced by US\$100/t to calculate a FOB Pemba price range. These
 were applied to an average forecast flake size distribution for the weathered ore at Montepuez, as determined by the
 metallurgical testwork conducted at ALS during the DFS and further testwork by BGRIMM on weathered samples. The
 assumptions around the basket price are shown below

	Price	Buffalo		Elephant	
Size fraction	FOB (\$/t product)	Weathered distribution	Fresh distributio n	Weathered distribution	
Fine, -150 µm (%)	700	76.7	54.9	77.3	
Medium, 150 to 180 (%)	900	14.3	11.0	13.1	
Large, 180 to 300 µm (%)	1,175	2.8	22.6	4.1	
Jumbo, +300 μm (%)	1,680	6.3	11.6	5.5	
Basket price (\$/t product)		804	944	800	

Market assessment

- The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.
- A customer and competitor analysis along with the identification of likely market windows for the product.
- Price and volume forecasts and the basis for these forecasts.
- For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.

- Analysis by BMI shows an expectation that the market demand for large flake and spherical graphite will continue to increase
 until at least 2020. This is primarily due to an increase in demand for spherical graphite, a derivative of flake graphite, used
 by lithium-ion battery anode producers.
- Other key producers of flake graphite within the region include Syrah Resources (Mozambique) Bass Metals (Madagascar) and Gecko (Namibia). BMI have identified approximately 20 graphite projects, excluding Montepuez that are currently in development worldwide.
- Customer acceptance of 96% TGC concentrate Flake Size has been received from an independent trading house in Japan, this includes consideration of impurities within the concentrate material.
- In addition, BAT has announced during 2018 that approximately 80% of the anticipated 50,000tpa of graphite concentrate production has entered into binding offtake agreements;
 - Qingdao Guangxing Electronics Materials Co. Ltd has signed for at least 10,000tpa of graphite concentrate
 - Qingdao Keshou New Materials Technology Co. has signed for at least 10,000tpa of graphite concentrate
 - Qingdao Black Dragon Graphite Co. Ltd has signed for at least 10,000tpa of graphite concentrate
 - US based graphite processing specialist Urbix Resources has signed for at least 5,000tpa of graphite concentrate and up to 11,000tpa.

Criteria	JORC Code explanation	Commentary
Economic	 The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc. NPV ranges and sensitivity to variations in the significant assumptions and inputs. 	 A detailed cash flow model was created using the pricing described above. The cash flow included a detailed schedule of Capital and Operating cost expenditures. Revenue from product sales were modelled by shipment with 100% payable within 60 days of production and paid FOB from the port of Pemba. No allowance was made for penalties associated with out of specification production or exceeding limits on deleterious elements. The cash flow was modelled in real terms, hence no price or cost escalation was applied. A discount rate of 10% was applied to determine a Net Present Value (NPV) from the project cash flow. The cash flow analysis demonstrated a positive return for the project with a pre-tax internal rate of return of 27%. Input costs were considered to be accurate to within +/- 20%. Costs were sourced either directly from vendor quotes specific to the project or consultant estimates for specific scopes of work. The financial model was reviewed by the Competent Person. The model was deemed to be closely aligned with the parameters used in mine planning. Various sensitivity analyses were carried out on the cash flow model. Key parameters were varied by +/- 20%. These parameters included product price, capital cost, processing cost, mining cost, general and administration costs, and logistics cost. The results were evaluated on the basis of pre-tax NPV. All parameters tested returned a positive NPV over the range. The most sensitive factor was determined to be the product price which, based on the modeling, showed the project will be hypersensitive to changes in both positive and negative directions.
Social	The status of agreements with key stakeholders and matters leading to social license to operate.	 BAT has submitted its proposed Social Development Programs in its Mine License Application 8770C to the National Institute of Mining ("INAMI") which is part of legislated requirements. The programs focuses on providing indirect benefits for the general community due to the high expectations of employment from the local community communicated during the initial public participation process. BAT have advised the Competent Person that there are no dwellings or agriculture within the proposed mining on the license area, therefore relocation of infrastructure (including homes) or other forms of compensation will is not be required. As there are no dwellings on the license area, relocation of infrastructure (including homes) is not required. Under Mozambique regulations, farmers are entitled to compensation for loss of agricultural land as per decree Regulation of Resettlement Process Resulting from Economic Activities (Decree 31/2012 of August 8). BAT will continue to work with local consultants on the best management practices for the existing small farm holdings to ensure household incomes are not negatively impacted by the development of the mine. Other Social Impacts which will need careful management include population growth of nearby townships, large number of job seekers, community high expectations and harvesting of natural resources on the license area. Community engagement has been initiated and is ongoing at this time. Communities' consultation extends to those settlements proximal to the project area that will be affected by the mining operation and the associated transport routes.
Other	 To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves: Any identified material naturally occurring risks. The status of material legal agreements and marketing arrangements. 	 The lease is currently held by Suni Resources a wholly owned subsidiary of BAT. National ownership of an estimate 5% is anticipated to be agreed within the parameters of the mining contract. The mining lease has been approved for the project. The following government agreements and approvals are outstanding at this time and are material to the project execution Land Holding (DUAT) License Montepuez to Site Road Works Permit Labour Agreements No material impediments to reaching agreement or granting approvals have been identified by BAT.

Criteria	JORC Code explanation	Commentary
Classification	 The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent. The basis for the classification of the Ore Reserves into varying confidence categories. Whether the result appropriately reflects the Competent Person's view of the deposit. The proportion of Probable Ore Reserves that have been derived from Measured Mineral 	 The Ore Reserve was classified in accordance with the guidelines in the JORC Code (2012). Standard and appropriate modifying factors and conversions were applied. The combined Buffalo and Elephant deposit Ore Reserve comprised approximately 99% Measured and Indicated Mineral Resource with the balance comprising dilution from Inferred and unclassified material. The entire estimate was classified as a Probable Ore Reserve. Measured Resources were converted to Probable Ore Reserves due to uncertainty in the modifying factors. The Ore Reserve estimation and classification methods used were considered by the Competent Person to be appropriate for the style and nature of the deposit.
Audits or reviews	Resources (if any). The results of any audits or reviews of Ore Reserve estimates.	 The Ore Reserve estimate was subject to internal reviews by Snowden. Review of the consultant reports were also conducted by BAT. All identified issues were addressed progressively through the study. It is anticipated that independent technical review will be undertaken by a third party at the conclusion of this study work
Discussion of relative accuracy/ confidence	Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For	 A detailed cash flow model was created using the pricing described above. The cash flow analysis demonstrated a positive return for the project. Key risks for the project relate to Uncertainty around product pricing over the project life Demonstration of recoveries and concentrate grade at scale and for all material Tonnes and grade of fresh ore with closer spaced drilling Sensitivity analysis has shown that the project can still produce a positive return with some downside in any of these aspects.

the estimate should be compared with production data, where available.