15 FEBRUARY 2017

Lithium Ion Battery anode PFS and Montepuez Graphite DFS confirm robust economics

Highlights:

Consolidated purified spherical graphite ("PSG") PFS and Montepuez Graphite DFS

- Outstanding project economics – consolidated NPV of US$524 million at 10% discount rate and strong IRR of 36.2%
- Rapid payback period of 3 years
- Long mine life of 30 years
- Significant consolidated cashflow from operations of approx. US$2.4 billion
- Forecast life-of-mine consolidated revenue of US$7.1 billion
- Lowest quartile on the cash cost curve for flake graphite DFS OPEX
- Significant optimisation potential exists to reduce OPEX and CAPEX

PFS on PSG produced from Montepuez concentrate

- Adds US$377 million to Montepuez Graphite Project's DFS NPV of $146 million
- Full traceability, accountability and transparency of 'green' PSG process from mine to battery to surpass socially conscious end-user best practise requirements
- Lithium Ion Battery anode material can be produced in an environmentally friendly manner without the use of any acid or harsh chemicals in the process
- Exceptional performance of Company PSG in lithium ion test batteries. End-users and battery suppliers have requested larger volumes of BAT anode material (PSG)
- PSG DFS expected to be completed by end of 2017

Battery Minerals Limited (ASX: BAT) ("Battery Minerals", BAT or the "Company") is pleased to announce the results of the Definitive Feasibility Study ("DFS) completed on Battery Minerals' Montepuez Graphite Project in Mozambique and the results of the Pre-Feasibility Study ("PFS") on Lithium Ion Battery anode [also known as purified spherical graphite ("PSG")] in USA.

Commenting on the study results, Battery Minerals Managing Director, Cherie Leeden, said:

> **"Within a two year period, our team has made a greenfields graphite discovery which we have transformed into a full scale Montepuez Graphite Project Definitive Feasibility Study, resulting in extremely compelling economics. Over the next few months, we will explore the opportunity to fast track production and significantly reduce our CAPEX via considering secondhand equipment. We will investigate OPEX reduction via considering a higher grade/shorter mine life scenario combined with significantly improved recoveries and concentrate grade using attrition cells."**
>
> **"We're proud to be not only the first ASX-listed graphite company to deliver an anode material PFS but also the first to be able to actually produce spherical graphite at our US-based pilot plant. It is the creation of anode material that differentiates us from our peers. It is our vision that BAT will become a world leader in producing environmentally friendly and fully traceable anode material for Lithium Ion Batteries (LiB), and in the process be responsible for making a positive difference to how the world stores energy."**

A summary of the key PSG PFS and Montepuez DFS findings are shown below:

Consolidated PSG PFS and Montepuez DFS findings

Consolidated net revenue	US$7,120 million
Consolidated cash generation	US$2,368 million
Net Present Value (NPV) (10% discount rate)	US$524 million
Internal Rate of Return (IRR)	36.2%
Consolidated payback period	3 years
Consolidated capex	US$168 million

Key study findings

	PFS* on PSG**	**DFS*** on Montepuez Graphite Project**
Annual production	-20,000t of 99.99% PSG -20,000t recarburiser product	-100,000 tonnes of 96% purity graphite concentrate
Life of Mine (LoM) / Life of Project (LoP) net revenue	US$4,903 million	US$2,156 million
LoM cash generation	US$1,558 million	US$809 million
NPV (10% discount rate)*	US$377 million	US$146 million
IRR*	76.5%	21.4%
Project payback period	1.5 years	4.75 years
Capex (pre-production)	US$48 million	US$126 million
LoM operating cash cost	US$5,506 per tonne of PSG	US$444/t of product (FOB)
Mine life **		30 years

*- Excludes National Ownership (anticipated to be ~5%) and 32% tax rate
**- Based on Ore Reserves (see ASX released dated 15 February 2017) prepared by a competent person in accordance with the requirements in Appendix 5A (JORC Code)
***- DFS (+/-15%) and PFS (+/- 30%)

Key Outcomes

- Long mine life of 30 years
- Significant cashflow from operations of approx. US$2.4 billion
- NPV of US$524 million
- Payback period of 3 years
- Significant optimisation opportunities to be explored in 2017

Key outcomes of the consolidated Montepuez Graphite Project DFS and PSG PFS from Montepuez concentrate include a consolidated Net Present Value (NPV) of US$524 million over a 30 year project life, with a payback period of 3 years.

The PSG PFS from Montepuez concentrate shows that this downstream processing alone adds over US$377 million of NPV at 20,000 tonnes pa of 99.99% PSG, with establishment capex of US$48 million and a payback period of ~1.5 years once the PSG facility is in operation.

A DFS on the PSG project is expected to be completed in late 2017.

Summary of consolidated Montepuez Graphite DFS and PFS on PSG outcomes

Project life years [(1)]	30
Annual concentrate production tonnes	100,000
Annual Purified Spherical Graphite production (tonnes of 99.99%)	20,000
Annual recarburiser product production	20,000
Consolidated total revenue	US$7,120 million
Consolidated cash generation	US$2,368 million
Consolidated capital cost estimate (pre-production) [(2)]	US$174M
Average annual EBITDA	US$84 million
Project payback period years	3 years
LoM graphite concentrate assumed basket price	US$798/t
LoP assumed price of 99.99% PSG	US$7,500/t
LoP assumed price of recarburiser by-product	US$700/t
NPV (at 10% discount rate) before interest, tax and D&A	US$524 million
IRR	36.2%

Notes to table

1. See the Mineral Resources and Ore Reserve Update released by the Company to ASX on 15 February 2017
2. Establishment Capital requirements

Value Enhancement Opportunities

The board of Battery Minerals believe significant potential exists to enhance the value of the two projects as follows:

Montepuez Graphite Project DFS

- Three phase metallurgical testwork program has commenced to target further grade and recovery improvements on concentrates produced from the Montepuez mine and concentrator.
- Investigation of available second-hand equipment to reduce capital expenditure.
- Optimisation of mine throughput grade.

PSG PFS from Montepuez concentrate: Opportunities to be considered during DFS.

- Reduce transportation costs.
- Investigate and source local tax, research and development incentives.
- Timing of start-up of the PSG facility will be reviewed
- Reduce toll treatment costs relating to purification and coating of PSG.
- Consider demonstration plant in 2017.
- Investigate purchase of purification equipment Vs toll treatment.

Montepuez Graphite Project DFS outcomes

Montepuez Graphite Project DFS targeted annualised production rate of 100,000tpa of 96% TGC concentrate produced from ore sourced from the Elephant and Buffalo deposits respectively. The ore will be mined by simple open pit extraction methods enhanced by the sub cropping shallow and tabular orebody allowing ore to be mined from the near surface. The DFS has highlighted a very attractive LOM strip ratio of 0.6 tonnes of waste per tonne of ore, providing the Project with a very low operational mining cost.

The project contains a JORC compliant Probable Ore Reserve estimate of 41.4Mt @ 8.8% TGC for 3.64Mt of contained graphite at a cut-off grade of 4% TGC. This underpins the 30 year mine plan. Low grade ore stockpiled during the mine life will be processed in the last four years of operation from year 26 onwards. Process Plant fee will vary between 1.4 and 1.5 Mtpa. Significant exploration potential exists both along strike and at depth, both of which remain open in the geological model.

The mine DFS produces a graphite concentrate with a grade of 96% total graphitic carbon (TGC) producing four graphite flake products separated by size fraction.

Summary of Key Montepuez Graphite Project DFS outcomes

LoM years [1]	30
Annual concentrate production tonnes	100,000t pa
Total net revenue	US$ 2,217 million
Total EBITDA	US$809 million
Establishment capital cost estimate (pre-production)	US$126 million
Total C1 cash cost * [2]	US$1,173 million
Total cash cost FOB [3]	US$1,221 million
Average annual EBITDA	US$27 million
NPV (10% discount rate) before interest, tax and D&A	US$146 million
Project payback period years	4.75
LoM concentrate assumed basket price	US$798/t

Notes to table

1. See the Mineral Resources and Ore Reserve update released by the Company to ASX on 15 February 2017
2. Total C1 cash costs – all site costs plus transport and royalties
3. Total cash cost FOB – C1 costs plus sustaining capital and closure costs

Products and assumed pricing

Annual production	100,000t
Product size production per size fraction	
+300 micron	8,780t/a
-300+180 micron	21,590t/a
-180+106 micron	31,150t/a
-106+38 micron	38,490t/a
Product pricing (FOB Pemba)	
+300 micron	US$1,440/tonne
-300+180 micron	US$976/tonne
-180+106 micron	US$813/tonne
-106+38 micron	US$539/tonne
Basket price/weighted average	US$798/tonne

Location

The Montepuez Graphite Project is located in the province of Cabo Delgado in northern Mozambique near the township of Montepuez, which is approximately 200km west of the port of Pemba along an asphalt highway suitable for 16 wheel trucks. The road from Montepuez to the Montepuez Graphite Project is 60km north-west of Montepuez along an unsealed road which will be upgraded as part of the Project construction phase. BAT has investigated the transport routes available for graphite product export and its preference is to utilise the port at Pemba due to its more proximal location.

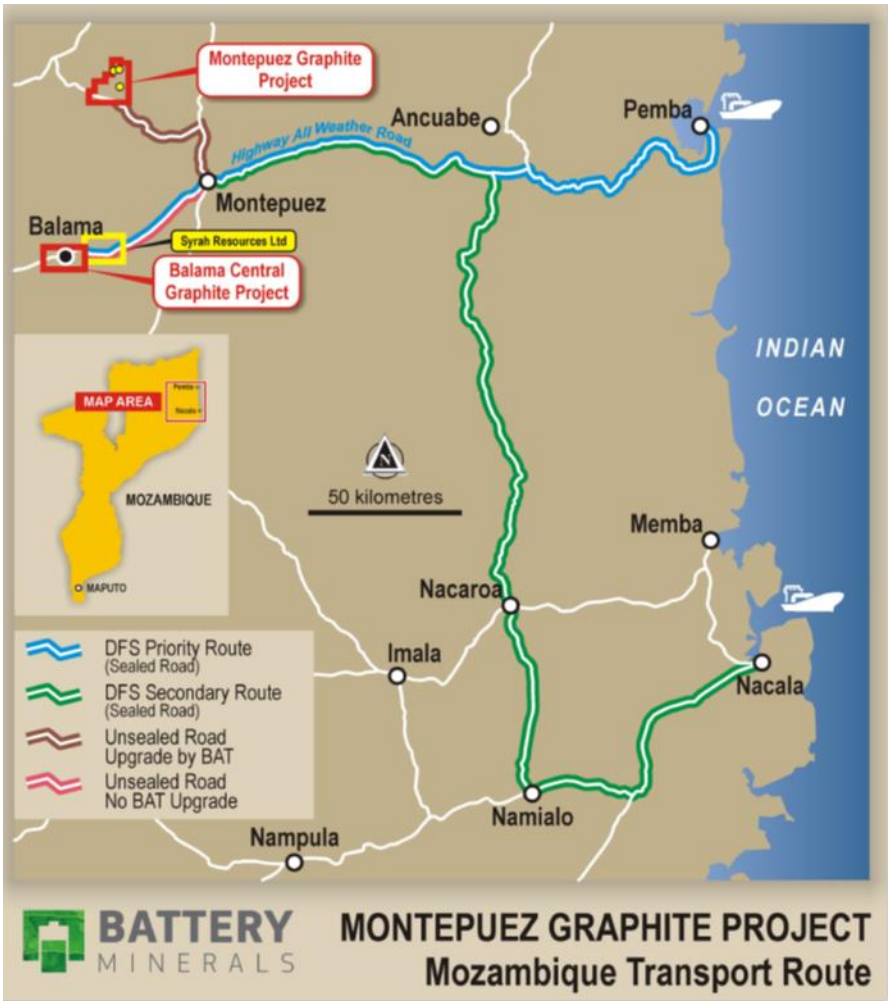


Figure 1. This map depicts BAT's priority transport route from the project site to Pemba Port with alternative route via Nacala Port.

Mine layout and design

The DFS final mine design is summarised in Figure 2. The mine infrastructure items have been extensively and carefully designed to minimise environmental impact whilst maintaining efficient capital expenditure and ongoing life-of-mine operating costs. The Elephant and Buffalo JORC compliant resources are shown with the life of mine final pit and waste dump design. The Lion Mineral Resource was not included in the DFS. Water will be stored in a valley fill dam (Water Storage Facility). The processed tailings will be deposited in the Tailings Storage Facility (TSF) and process water will be recycled back into the processing plant for re-use. The TSF is centrally located adjacent to the processing plant. In the current model, low grade stockpiles created during the mining of both Buffalo and Elephant will feed the plant towards the end of the mine life.

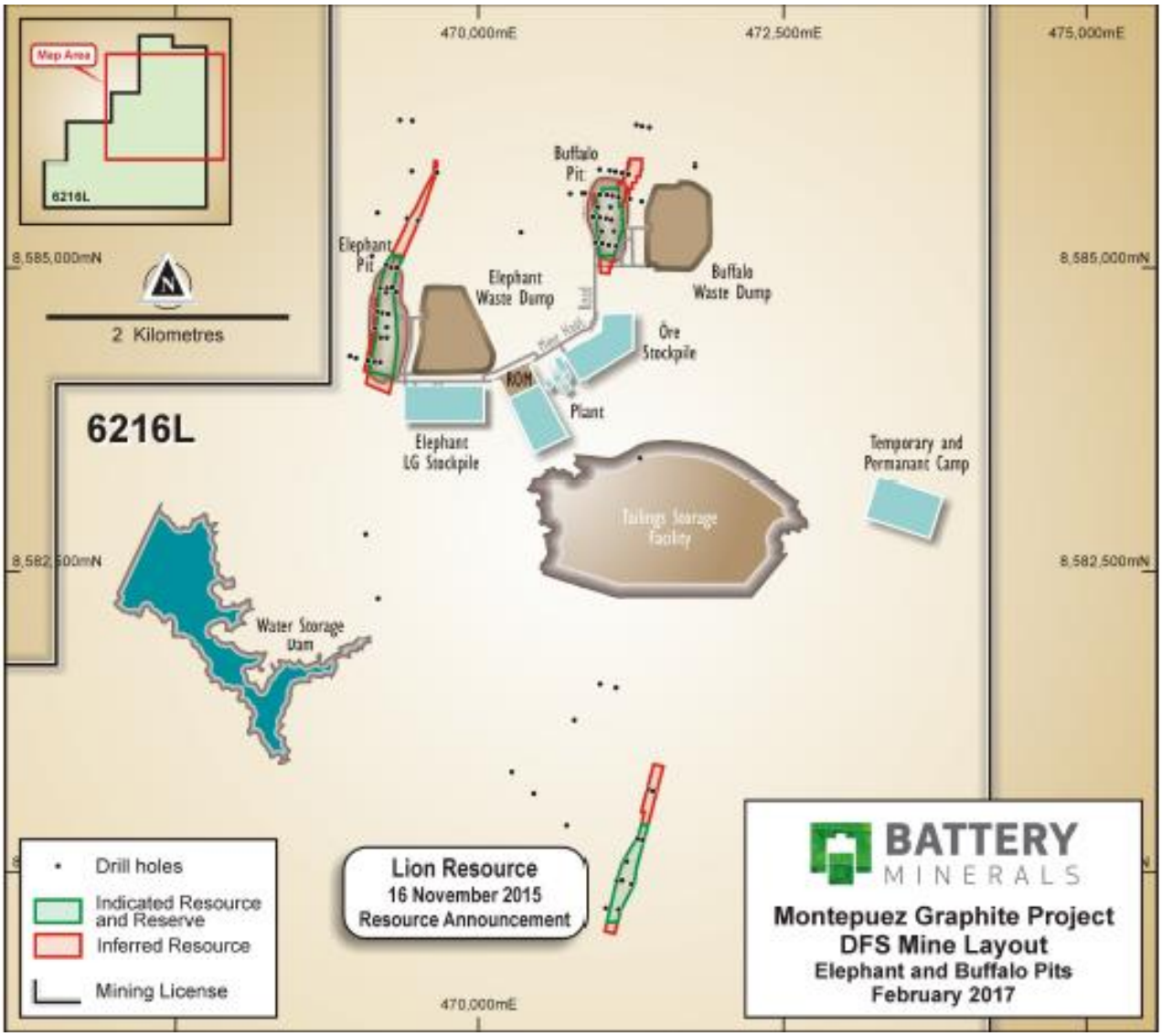


Figure 2. Mine layout and design showing location of the Buffalo and Elephant Pits and waste dumps and mine infrastructure locations for plant ore stockpile, tailings storage facility, water storage dam and temporary and permanent camp

DFS consultants and contractors

The DFS commenced in July 2016 and the Battery Minerals technical team has worked efficiently and effectively to deliver the DFS within 8 months with multiple studies managed and progressed simultaneously. The study scope included infill resource drilling at the Elephant deposit, further resource estimation and classification of the Buffalo and Elephant deposits, Ore Reserve estimation, life of mine planning, design and scheduling, transport route investigation and design, process plant infrastructure design and testwork, mine cost estimation and financial modelling, environmental and social impact assessment (ongoing), hydro geological and ground magnetic survey and hydro-geological drill program, geotechnical drilling for the Buffalo and Elephant deposit pit wall studies, mine and civil engineering moisture analysis, geotechnical drilling of water storage dam and tailings storage facility with field and laboratory testwork, tailings storage facility and water storage dam design, geochemical characterisation of acid mine drainage potential for both pits, waste dumps & low grade stockpiles, graphite flake size assessment and liberation, mineralogical characterisation, geometallurgical studies of surface trench and drill core samples and ground survey control. See Appendix 1 for a list of DFS consultants and contractors.

Mineral Resources and Ore Reserves

Battery Minerals published its updated Mineral Resources and Ore Reserves Estimations for the Montepuez Project on 15 February 2017 (see ASX Announcement dated 15 February 2017).

Highlights of Montepuez Graphite Project Mineral Resource and Ore Reserve Update included:

- Elephant deposit – Mineral Resources of 67.20Mt @ 7.5% TGC for 5.1Mt of graphite at a 2.5% TGC cut-off (see tables below).
- Buffalo Deposit – Mineral Resource: 38.70Mt @ 7.93% TGC for 3.0Mt of graphite at a 2.5% cut-off (see tables below).
- Ore Reserve estimate for Buffalo and Elephant deposits is 41.4Mt @ 8.80% TGC for 3.64Mt with a cut-off grade of 4% TGC (see tables below).

Summary of Montepuez Graphite Project Mineral Resource and Ore Reserve

ELEPHANT RESOURCE JANUARY 2017 @ 2.5% TGC cut off

Classification	Type	Elephant Mineral Resource				
		Tonnes	TGC	V2O5	Cont. Graphite	Cont. V2O5
		Mt	%	%	Mt	Kt
Indicated & Inferred	Weathered	7.80	7.70	0.19	0.60	15.00
	UnWeathered	59.40	7.50	0.19	4.50	114.00
	Total	***67.20***	***7.50***	0.19	***5.10***	***129.00***

BUFFALO RESOURCE DECEMBER 2016 @ 2.5% TGC cut off

Classification	Type	Buffalo Mineral Resource December 2016				
		Tonnes	TGC	V2O5	Cont. Graphite	Cont. V2O5
		Mt	%	%	Mt	Kt
Indicated & Inferred	Weathered	5.20	8.14	0.22	0.40	11.30
	UnWeathered	33.50	7.90	0.21	2.60	70.90
	Total	***38.70***	***7.93***	***0.21***	***3***	***82***

MONTEPUEZ GRAPHITE PROJECT – ORE RESERVE STATEMENT
@ 4% TGC cut-off - January 2017

Pits	Ore Type	Classification	Ore Reserve	TGC	Contained Graphite
			Mt	%	Mt
Buffalo & Elephant	Weathered	Proved	-	-	-
		Probable	8	8.5	0.68
	Fresh	Proved	-	-	-
		Probable	33.5	8.8	2.96
	Total	**Proved**	**-**	**-**	**-**
		Probable	**41.4**	**8.8**	**3.64**

Note: See ASX Announcement dated 15 February 2017 for full details.

Mining

A mining schedule was developed based on mining of the pit designs for the Elephant and Buffalo deposits. The mining rate was determined based on the processing plant target production of 100 ktpa at 96% TGC. A commissioning and ramp-up period of 12 months is included in the mine schedule. Over the life of the project, the throughput rate is expected to vary between 1.5Mtpa (weathered) and 1.34Mtpa (fresh). Ore Resource to Reserve conversion is 86% for Buffalo and 77% for Elephant calculated by contained graphite.

Mining will commence at the Buffalo pit for the first 4 years. A nine month pre-strip period is scheduled to provide sufficient waste to construct the ROM pad. After mining the shallow ore from Buffalo, the mining fleet will move to Elephant to mine the shallow ore in year 5. Over the first 7 years of production the strip ratio will be extremely low, approximately 0.2 (waste to ore ratio), and the mining rate will be approximately 1.7Mtpa (including ore and waste). After 7 years, an additional mining fleet will need to be mobilised to enable mining cutbacks at both Buffalo and Elephant pits simultaneously. At this time the mining rate will increase to approximately 3.2Mtpa. Overall, the strip ratio for the life of mine is estimated to be 0.6 (waste to ore ratio) and the life of mining (including pre-strip) is 27 years of the current Ore Reserve, which remains open along strike. Following the cessation of mining the remaining long-term stockpiles will be treated over a period of 4 years.

Mining of Buffalo and Elephant deposits will be by conventional open pit mining methods, using 90t excavators and 40t articulated dump trucks. The upper Saprolite layer is expected to be freely dug down to an estimated 5-15m for Buffalo and 10-20m for Elephant. The fresh deposit will require blasting. The orebody is wide and continuous above the cut-off grade, leading to a reasonably low level of dilution and ore loss, which were estimated to be approximately 4% and 2% TGC respectively.

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, weathering and TGC% grade ranges. The Ore Reserve cut-off grades were calculated to range between 2.9% TGC and 3.6% TGC depending on deposit and weathering classification. An elevated cut-off grade of 4% TGC was applied to the Ore Reserve for various technical and economic reasons.

Pit designs were based on Whittle pit optimisations for each deposit considering final project unit costs, prices, recoveries and geotechnical inputs. The pit optimisations were constrained within the limits of the Indicated Resource for each deposit. The final Buffalo pit will be approximately 90m deep, and the designed Elephant pit will be approximately 150m deep.

Each pit will have a single waste dump, located to the east of each pit. Pit ramps will be orientated to ensure that both ore and waste haulage distances are minimised. Long-term stockpiles will be located between each deposit and the ROM pad. The ROM is located mid-way between the pits to balance haulage costs.

Processing Facility

The Montepuez process plant will process run of mine (ROM) ore at an average rate of 1.38 Mt/a to produce 100,000 tpa of dry graphite concentrate with a grade of 96% total graphitic carbon (TGC). The flowsheet has been developed based on the results of extensive test work performed on various samples. The Montepuez process flowsheet comprises:

- ROM pad, with designated stockpile areas and ability to blend ore on pad or in ROM bin.
- Primary jaw crusher and crushed ore stockpile (COS)
- Primary closed circuit SAG mill.
- Rougher flotation.
- Three stages of concentrate regrinding and four stages of concentrate cleaning.
- Concentrate filtration.
- Concentrate drying, screening, and bagging.
- Tails thickening and disposal.
- Water and Air services.
- Reagents.

Figure 3. 3D model of Montepuez Graphite Project Processing Plant

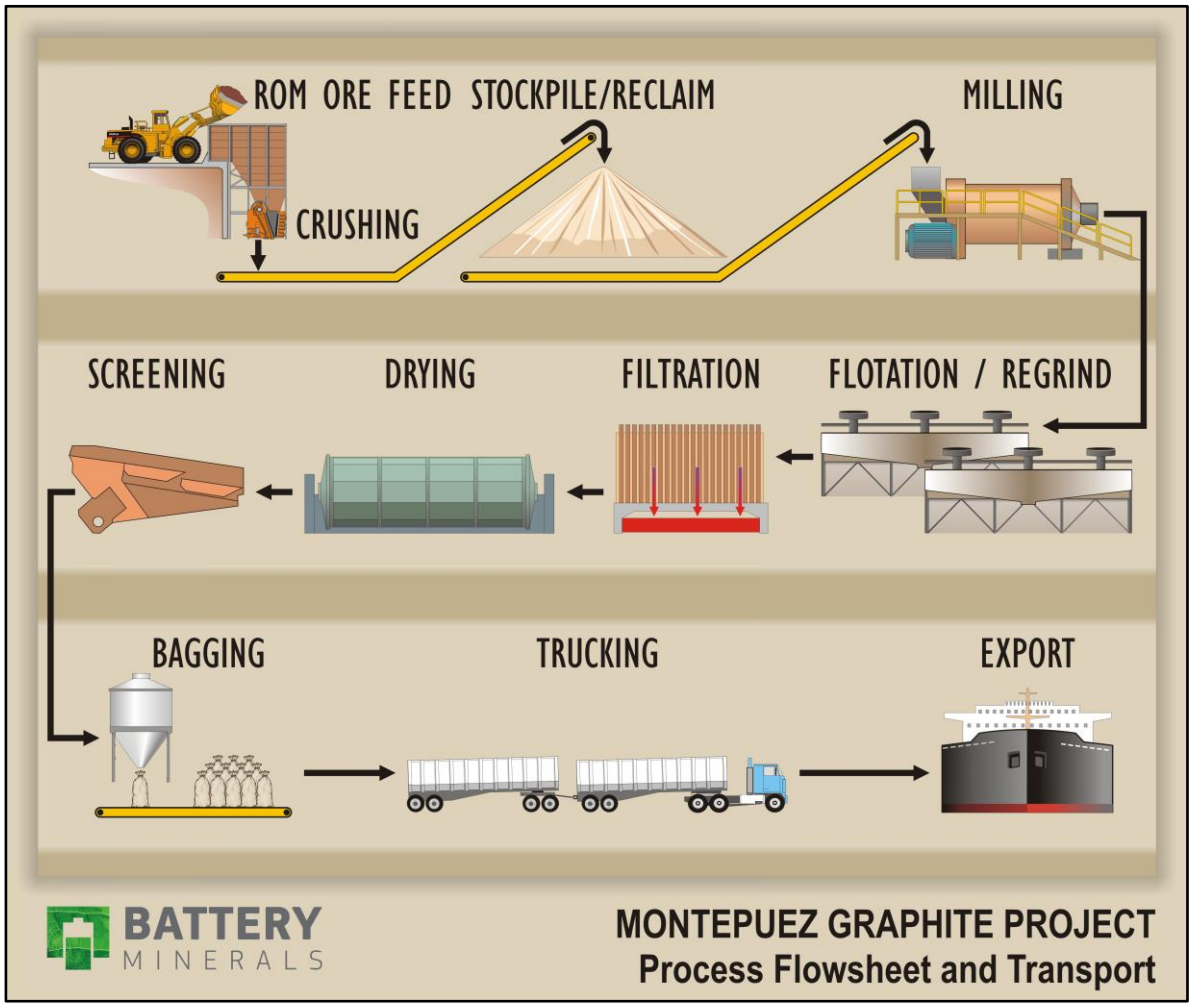


Figure 4. Diagrammatic flow explaining the Montepuez Graphite Project mine design and flowsheet including transport method.

Key Non-Process Infrastructure and other DFS work

See Appendix 2 for details on Key Non-Process Infrastructure.

For the DFS Metallurgical Testwork Program, Hydrology and Hydrogeology, Geotechnical Investigation, Environmental Assessment and Approvals and Mine Development Licensing Schedule, see Appendix 3 for full details.

Financial Evaluation

Summary of key inputs to the DFS Financial Model - Montepuez Mine & Concentrator

Key Project Statistics/Assumptions for Life of Mine (LoM)

Total tonnes ore mined & processed	tonnes (x1,000)	41,440
Total tonnes moved	tonnes (x1000)	65,336
Average LoM strip ratio		0.58
Average head grade (TGC)	%	8.79
Average annual production rate (@96% purity)	tpa (x1,000)	1,381
Average graphite recovery (@96% purity)	%	73.28
Product size distribution		
+300 micron	%	8.78
-300+180 micron	%	21.59
-180+106 micron	%	31.15
-106+38 micron	%	38.49
Product pricing (FOB Pemba)		
+300 micron	$/tonne	$1,440
-300+180 micron	$/tonne	$976
-180+106 micron	$/tonne	$813
-106+38 micron	$/tonne	$539
Basket price	$/tonne	$798
Average LoM cash operating cost	$/tonne	$444

Notes:

1) All costs and revenues quoted pre-tax (32% tax rate) and exclude National Ownership (anticipated to be ~5%)
2) Costs include 3% royalty
3) Costs are based on Q4, 2016 and are unescalated

Capital Cost Estimate

The total estimated pre-production establishment capital cost for the project is US$126M, including contingency, as summarised in below table:

Establishment Capital - Summary Table

Area	Total USD	%
Mining	$6,263,014	5.0%
Process plant	$53,898,003	42.7%
TSF	$5,037,665	4.0%
Raw water dam	$3,784,200	3.0%
Site preparation	$6,681,121	5.3%
Mobile equipment	$6,870,701	5.4%
Non process infrastructure	$8,588,977	6.8%
Indirect costs	$1,436,6745	11.4%
Owners costs	$10,118,9244	8.0%
Contingency	$10,516,971	8.3%
Total	**$126,126,321**	**100.0%**

Cash Operating Cost Estimate

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

CATEGORY	COST US$/y	COST US$/t feed	COST US$/t product	Distribution
Labour	5,052,649	3.60	50.53	11.97%
Power	5,705,000	4.07	57.05	13.52%
Reagents & consumables	5,855,000	4.17	58.55	13.87%
Maintenance materials	1,367,000	0.97	13.67	3.24%
G&A	4,788,117	3.41	47.88	11.35%
Product logistics	7,601,000	5.42	76.01	18.01%
Earthworks crew	1,375,000	0.98	13.75	3.26%
Mining	10,460,000	7.45	104.6	24.78%
TOTAL	**42,203,766**	**30.08**	**422.04**	**100.00%**

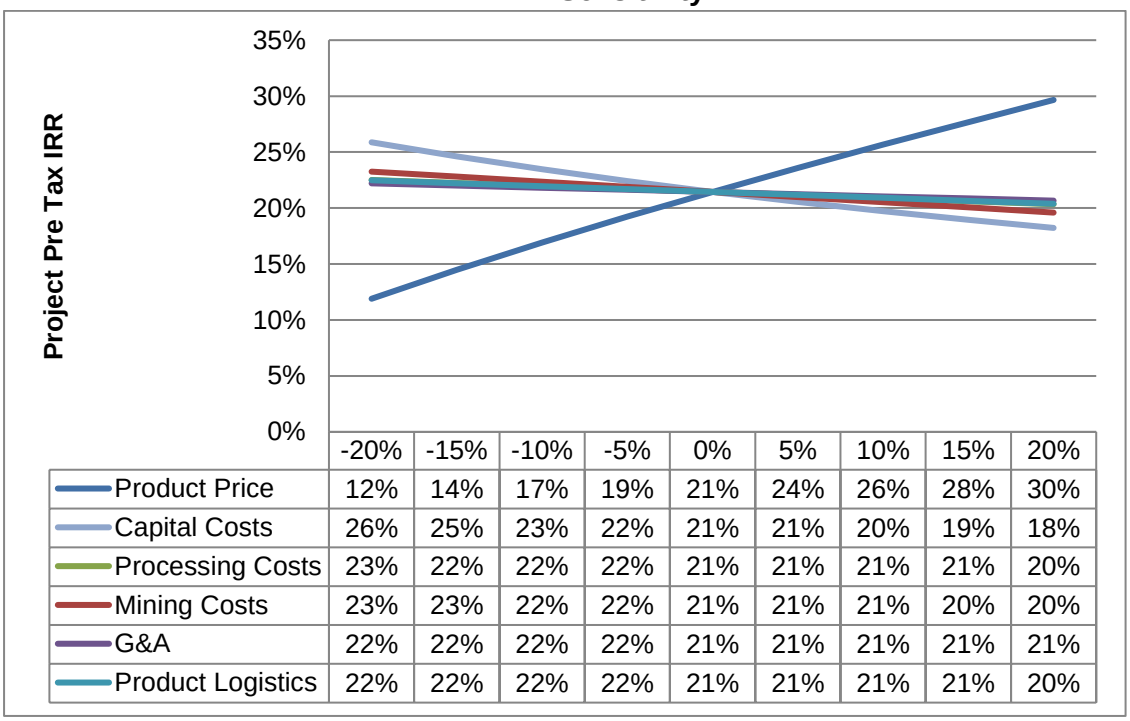
Notes: 1) Above table excludes Royalties. Royalty at 3% adds $21.65 cost per tonne Product
2) Above table based on average blended ore @100,000 tpa TGC production rate and 1,403 ktpa ore processed

Financial Analysis – Sensitivities

NPV Sensitivity

	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%
Product Price	21.32	52.61	83.90	115.1	146.4	177.7	209.0	240.3	271.6
Mining Costs	171.8	165.4	159.1	152.8	146.4	140.1	133.8	127.4	121.1
Processing Costs	162.5	158.5	154.5	150.5	146.4	142.4	138.4	134.3	130.3
Product Logistics	161.0	157.3	153.7	150.1	146.4	142.8	139.2	135.5	131.9
G&A	157.1	154.4	151.7	149.1	146.4	143.8	141.1	138.5	135.8
Capital Costs	172.2	165.7	159.3	152.9	146.4	140.0	133.6	127.1	120.7

IRR Sensitivity



	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%
Product Price	12%	14%	17%	19%	21%	24%	26%	28%	30%
Capital Costs	26%	25%	23%	22%	21%	21%	20%	19%	18%
Processing Costs	23%	22%	22%	22%	21%	21%	21%	21%	20%
Mining Costs	23%	23%	22%	22%	21%	21%	21%	20%	20%
G&A	22%	22%	22%	22%	21%	21%	21%	21%	21%
Product Logistics	22%	22%	22%	22%	21%	21%	21%	21%	20%

Marketing

Product size and specification

Flake Graphite Concentrate Sizing

Flake size	Flake size (mesh)	Flake size (micron)
Fine	-100 Mesh	+38 -106
Medium	+100 Mesh	+106 -180
Large	+80 Mesh	+180 -300
Jumbo	+50 Mesh	+300

Market feedback is that a product of minimum 95% grade is typically the minimum required concentrate. The majority of BAT's peer group has announced projects that will produce a 95% concentrate. Based on early positive test-work, BAT has chosen to produce a 96% concentrate. This approach has been discussed with potential customers and the informal feedback has been that the proposed 96% premium product produced by BAT will be sought after and provide a point of differentiation against other projects in the market. BAT will investigate the economics of producing a 98% TGC product during Q2 2017.

Basis of product pricing

An independent forecast of market pricing was prepared for Battery Minerals Ltd by Benchmark Intelligence, an independent publishing business focused on critical mineral supply chains and disruptive technologies. The report and accompanying forecast are dated December 2016. The forecast presented a data set for each of the project's selected 4 flake product size fractions.

Flake Size	Flake Size (mesh)	Flake Size (micron)	Average price USD$/t	Adjusted FOB Pemba USD$/t
Fine	-100	+38 -106	628	**539**
Medium	+100	+106 -180	902	**813**
Large	+80	+180 -300	1065	**976**
Jumbo	+50	+300	1529	**1440**

Calculated Flake Graphite Concentrate Pricing, 96% grade, FOB Pemba port

The weighted average basket price for the project is $797.68, based on the life of mine fractions of each product size.

Flake Size (	Flake Size (mesh)	Flake Size (micron)	Adjusted FOB Pemba USD$/t	LOM %
Fine	-100	+38 -106	539	38.5%
Medium	+100	+106 -180	813	31.1%
Large	+80	+180 -300	976	21.6%
Jumbo	+50	+300	1440	8.8%
			Basket Price/ weighted average/t	**US$797.68**

Calculated Basket Price based on Life-of-mine product blend, FOB Calculated Basket Price based on FOB Pemba port

Customer validation

The project has received confirmation of interest and verification of product quality from major Japanese, Chinese and US graphite consumers, each after receiving product samples and conducting their own analysis. The Company remains in offtake discussions with these parties.

To further support buyer acceptance of the Battery Minerals product, an ICP scan analysis was conducted on 22 composite samples and for 6 other samples separated into the 4 proposed project size classifications, that is a further 24 analyses by size. The results of the 46 scans were shared with the two potential end users and acceptance of the range of impurities indicated has been received.

Project Delivery Schedule

See Appendix 4 for details on the Project Delivery Schedule for the Montepuez Mine & Concentrator.

PFS on Lithium Ion Battery anode PSG from Montepuez concentrate

The vast majority of anode material (PSG) found in lithium ion batteries has been purified using harsh chemicals and acid, typically dominated by toxic hydrofluoric acid. Instead of following the Chinese dominant method of using acid to remove the impurities from the graphite concentrate to take it from circa 96%TGC to battery grade 99.99%TGC, BAT has opted to use high temperature purification methods which, powered by green energy (hydroelectricity) is an environmentally friendly and socially conscious alternative. BAT has committed to leading the battery supplier sector in the creation of environmentally friendly anode material

Summary of Key Outcomes from PSG PFS include;

Total NPV enhanced by	+ US $377.1 million
Annual production - 99.99% Spherical Graphite	20,000 tonnes
Life of project gross revenue	US$4,904 million
LoP net revenue	US$1,558 million
LoP total costs	US$3,345 million
Capital expenditure(1)	US$48million
NPV @10%	US$377.1 million
IRR	76.5%
Project payback	1.5 years
LoP	30 years
LoP OPEX	US$5,506 per tonne of 99.99% PSG
LoP total cash cost(2)	US$5,594 per tonne of 99.99% PSG
LoP assumed price of 99.99% PSG	US$7,500/t
Annual production of recarburiser by-product	20,000 tonnes
LoP assumed price of recarburiser by-product	US$700/t

Notes to table
1. Cashflow excludes interest, tax, depreciation and amortisation
2. Includes sustaining capital

Key Assumptions

1 The PSG processing facility basis of design was to process the -106 +38µm graphite concentrate produced by the Montepuez Graphite mine in Mozambique.

2 The PSG facility location selected for the base case PSG PFS estimates is located in the USA. Several locations were considered as part of the study. The selection was based on;
   a. Locality to potential US market off-takers
   b. Locality to potential international off-takers
   c. Cost effective and sustainable power supply
   d. Logistics and transport simplicity
   e. Lower taxation environment.

3 The thermal purification and coating plant location will be in the same area as the PSG facility.

Spherical Graphite Processing Facilities

Location

A number of locations were assessed for constructing the PSG facility. In Mozambique these included the Montepuez Mine Site and Matola/Maputo. In the USA, these included: Houston in Texas, Chattanooga in Tennessee, Sanborn in New York and Reno in Nevada.

Reno was selected based on its proximity to the largest potential USA based consumer of PSG, the proximity to the potential Asian markets of Japan and South Korea, attractive tax regime, cost effective power supply and access to a large logistics infrastructure.

Processing Facility

The Battery Minerals PSG plant has been designed to process 40,000tpa of concentrated -106µm +38µm graphite flake from the Montepuez graphite mine. The PSG facility capacity was selected to account for the variability in mine production outputs over the initial 10 years of mine life where the production of -106 +38 µm varies between 38,000tpa and 42,000tpa.

The material will be bagged into 1 tonne bulka bags at the Montepuez mine site before being trucked to the local port at Pemba. Here the bags will be loaded into sealed containers to protect them from the environment. The containers will be shipped from Pemba Port, in northern Mozambique to the port of San Francisco, before being trucked or railed to the PSG facility in Reno, Nevada.

The containers will be offloaded at the PSG facility by container handling mobile equipment. The bags will be stored in a secure, indoor area.

Forklifts will recover the bags from the storage area and place them in the feed loading area of the spheronising process plant. An electric hoist will move the bags to the primary jet milling and sizing feed bin. The bag will be broken on a static bag breaker and the concentrate graphite flake will gravitate, under vacuum, into the feed bin. The material will be processed through a primary inter-particle grinding, jet mill to produce a nominal size fraction of D_{100} of 45 microns. This material will then be “shaped” by inter-particle attrition, under vacuum conditions, in the purpose design spheronisation mills, to produce a spherical graphite product. The product is recovered under vacuum and bagged into bulka-bags.

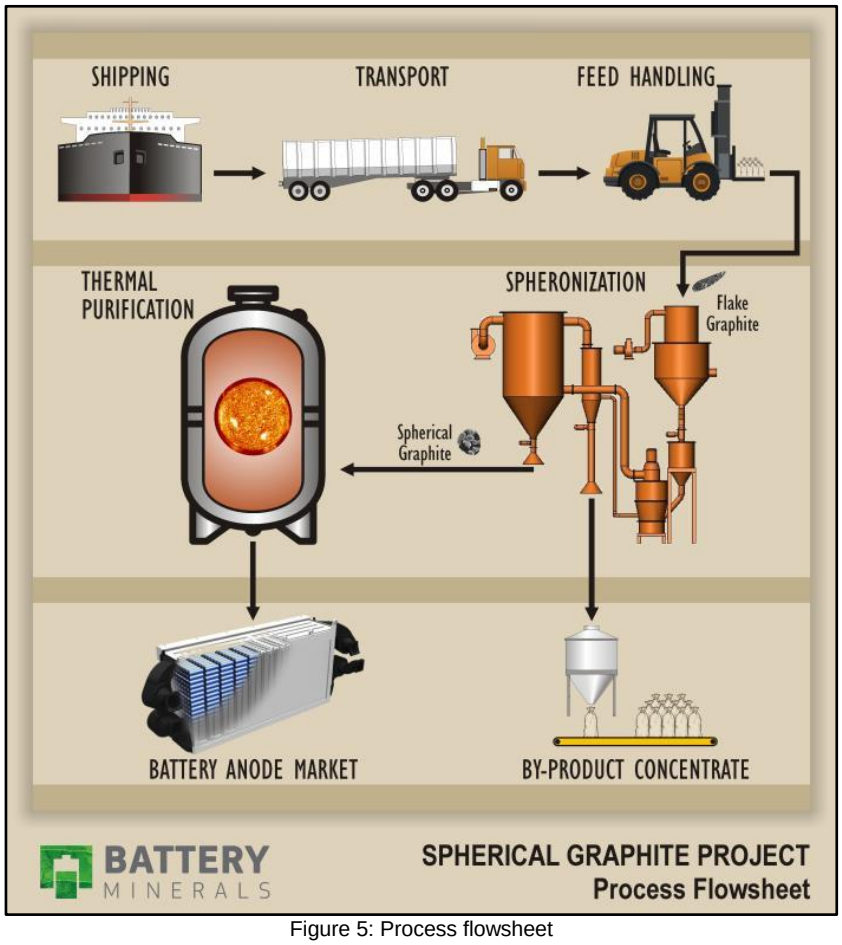


Figure 5: Process flowsheet

Once spheronised the desirable size fraction will then be purified/coated utilising a specialised toll treatment high temperature furnace at approximately 2500 degrees Celsius to achieve purification to ~99%TGC. An allowance has been made in the opex to coat the purified graphite, should it be required. During the milling and shaping processes ultrafine, -10µm material, is generated as a by-product. This material, typically having a graphite grade <96%, is bagged and forms a product source to the re-carburisation industry.

Forklifts will transport the bagged PSG and recarburiser product to the indoor product storage area. Sufficient space to store two weeks product has been allowed for. The bags will be either packed onto covered trucks or into containers by forklift for transport to the market. This is a dry and environmentally friendly processing facility that produces no harmful waste or toxic elements.

The estimate has allowed for a fully operational laboratory on site, which will have the equipment to conduct grade analysis across the key deleterious elements of graphite concentrate feed and PSG and recarburiser product, product particle sizing and shape assessments and provide QA certificates to the purification facility and the recarburiser off-takers for product prior to shipment. The plant is designed to allow any off specification material to be re-processed to ensure spherical targets of shape, tap density and size are achieved.

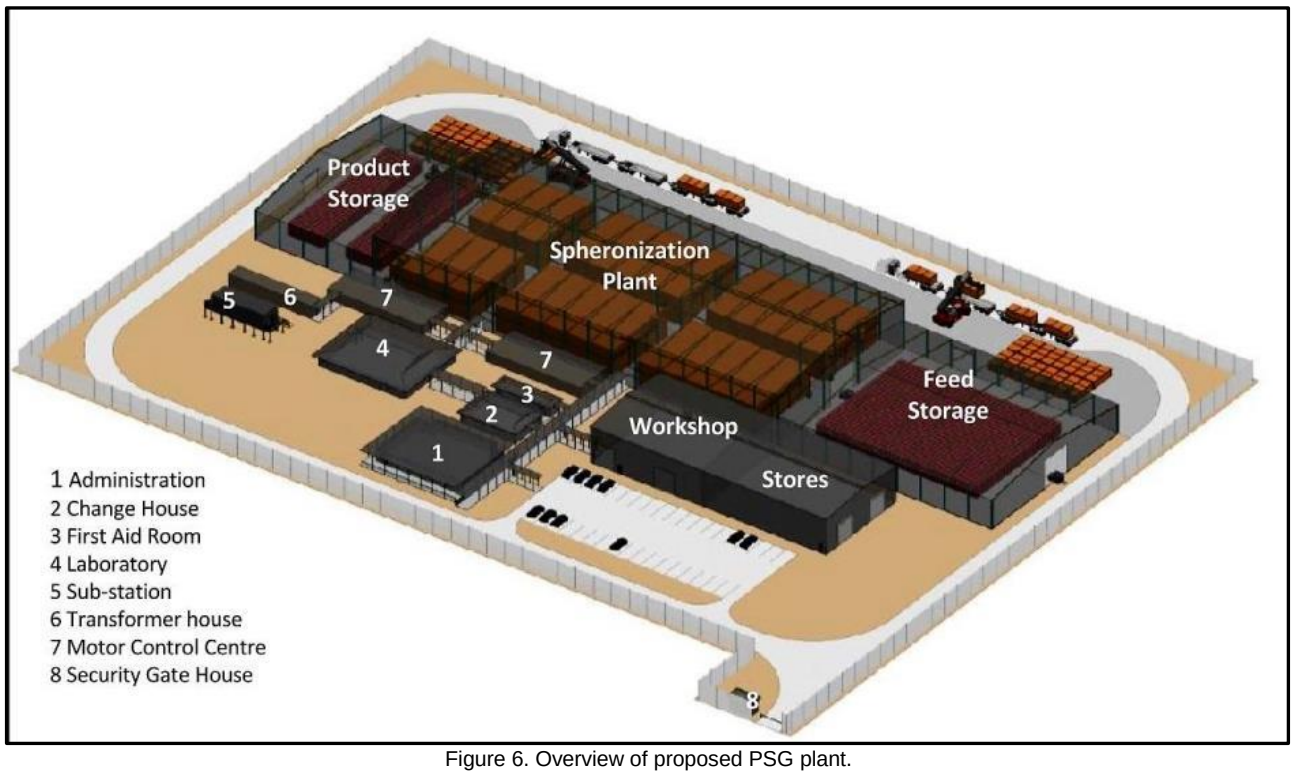


Figure 6. Overview of proposed PSG plant.

Testwork

The graphite concentrate produced from Montepuez sampling was sent to battery specialist consultant, Coulometrics, in Tennessee, USA for electrical capability testing to determine suitability of producing anode battery material. The results indicate that the unpurified Montepuez graphite concentrate (96% TGC, not yet heat treatment purified) achieved satisfactory electrical capabilities as compared to industry ranges expected for purified battery anode material. Typically over 99.95% TGC is utilised in a LiB. The results of the Company's not yet purified graphite concentrate at 96% TGC are summarised below and compares favourably against most purified material:

Spherical Test Results

		BAT 96% Spheronised Graphite
Tap density	**g/cc**	0.96
BET avg	**m2/g**	7.13
D10	**µm**	8.37
D50	**µm**	19.76
D90	**µm**	34.74

Recoveries of PSG product of 50% were achieved at BAT's pilot plant and used as the basis for the mass balance in the PSG PFS. The results of the laboratory testwork indicate that the Montepuez graphite contains a suitable crystalline structure and quality to be supplied to the battery anode manufacturing industry.

Financial Evaluation

1. Summary of PSG PFS Financial Model

PSG PFS Financial Model	
Annual production - +96% Spherical Graphite	20,000 tonnes
LoP gross revenue	US$4,904 million
LoP net revenue	US$1,558 million
LoP total costs	US$3,345 million
Capital expenditure	US$48 million
NPV @10%	US$377.1 million
IRR	76.5%
Project payback	1.5 years
LoP OPEX	US$5,506 per tonne of 99.95% PSG
LoP total cash cost(1)	US$5,594 per tonne of 99.99% PSG
LoP assumed price of 99.95% PSG	US$7,500/t
Annual production – recarburiser by-product	20,000 tonnes
LoP assumed price of recarburiser by-product	US$700/t

Notes to table
1) Includes sustaining capital

2. PSG Pricing Metrics

	PFS Revenue Price US$/t	Morgan Stanley Research Note (1) $/t	Avicenne Energy (2) $/t
Coated Purified Spherical Graphite	7,500	9,319	10,000 – 15,000

(1) Morgan Stanley Research Note, Syrah Resources, January 30, 09.35pm GMT
(2) Presentation - The Rechargeable Battery Market and Main Trends, 33rd International Battery Seminar & Exhibit, March 21, 2016, Avicenne Energy,

Despite the positive market forecasts for demand of high purity spherical graphite, BAT opted for a more conservative approach to long term revenue pricing to make allowance for the situation of a possible price reduction. The Company opted to adopt this approach at PFS level to compensate for this unknown market risk.

3. Capital cost estimates

Capital Cost Summary	USD
Spherical Graphite Process Plant	$17,553,195
On-site infrastructure	$9,336,412
Indirect costs	$10,136,216
Contingency	$10,741,395
CONSTRUCTION CAPITAL ESTIMATE	**$47,767,217**
Working capital	$4,037,236
TOTAL CAPITAL ESTIMATE	**$51,804,453**

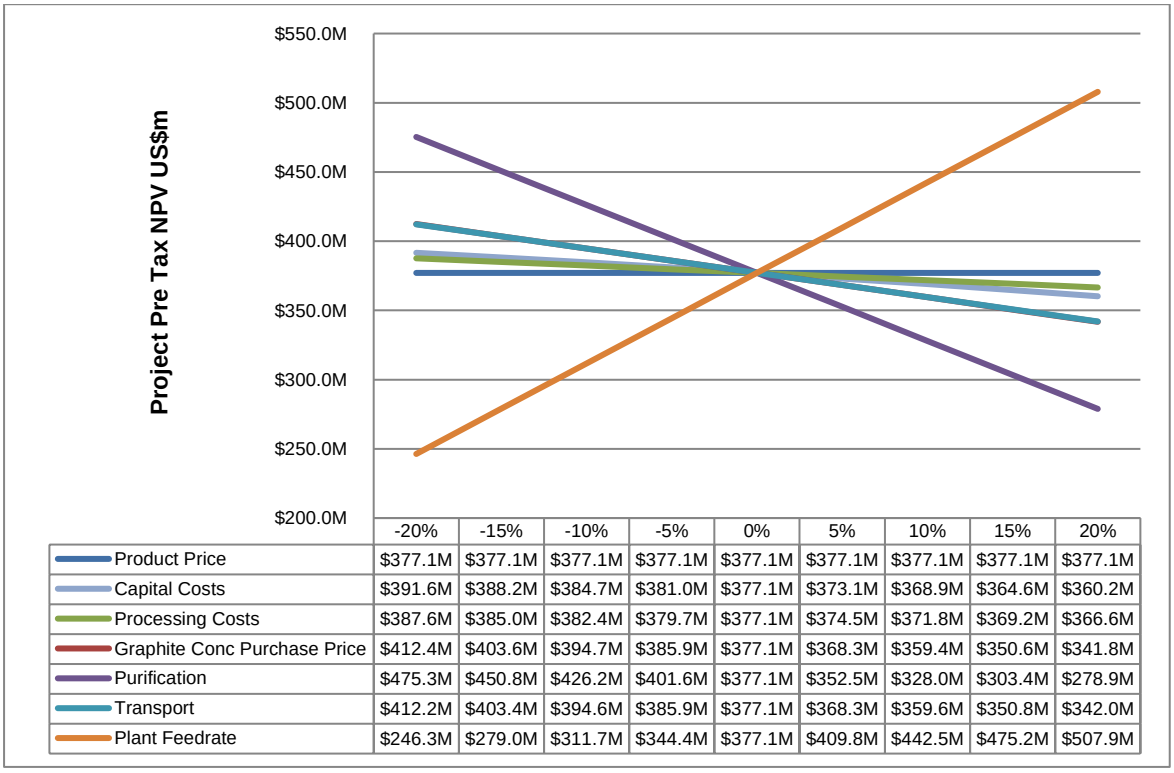
4. Cash operating costs estimates

Operating Cost Summary (OPEX)

CATEGORY	COST US$/y	COST US$/t feed	COST US$/t product	Distribution
Purchase price	21,560,000	539.00	1078.00	19.6%
Labour	3,274,332	81.86	163.72	3.0%
Power	2,033,799	50.84	101.69	1.8%
Consumables	686,451	17.16	34.32	0.6%
Maintenance materials	698,438	17.46	34.92	0.6%
G&A	430,933	10.77	21.55	0.4%
Product logistics	21,429,444	535.74	1,071.47	19.5%
OPEX PSG plant	**$50,113,398**	**$1,253**	**$2,506**	**45.5%**
Thermal purification/coating	$60,000,000	$1,500	$3,000	54.5%
TOTAL	**$110,113,398**	**$2,753**	**$5,506**	**100%**

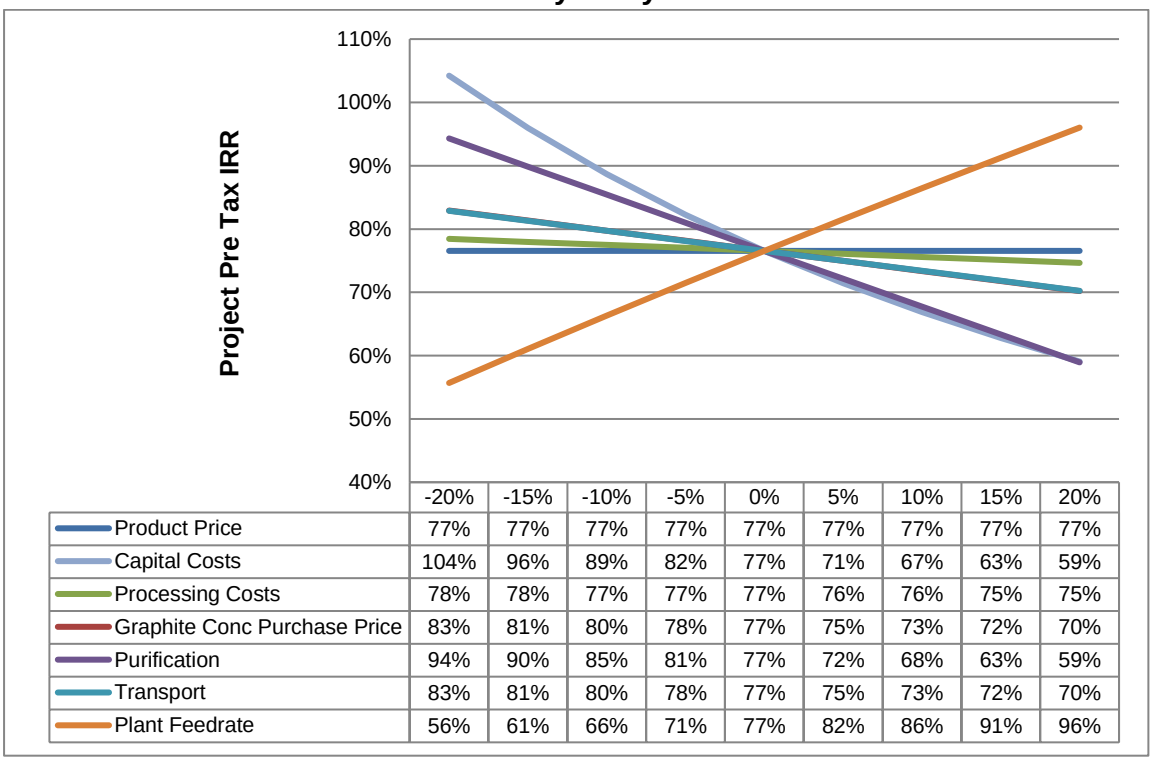
5. Financial Analysis – Sensitives with base case +/- 20 and +/- 20%

Sensitivity Analysis – NPV



	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%
Product Price	$377.1M	$377.1M	$377.1M	$377.1M	$377.1M	$377.1M	$377.1M	$377.1M	$377.1M
Capital Costs	$391.6M	$388.2M	$384.7M	$381.0M	$377.1M	$373.1M	$368.9M	$364.6M	$360.2M
Processing Costs	$387.6M	$385.0M	$382.4M	$379.7M	$377.1M	$374.5M	$371.8M	$369.2M	$366.6M
Graphite Conc Purchase Price	$412.4M	$403.6M	$394.7M	$385.9M	$377.1M	$368.3M	$359.4M	$350.6M	$341.8M
Purification	$475.3M	$450.8M	$426.2M	$401.6M	$377.1M	$352.5M	$328.0M	$303.4M	$278.9M
Transport	$412.2M	$403.4M	$394.6M	$385.9M	$377.1M	$368.3M	$359.6M	$350.8M	$342.0M
Plant Feedrate	$246.3M	$279.0M	$311.7M	$344.4M	$377.1M	$409.8M	$442.5M	$475.2M	$507.9M

Sensitivity Analysis – IRR



	-20%	-15%	-10%	-5%	0%	5%	10%	15%	20%
Product Price	77%	77%	77%	77%	77%	77%	77%	77%	77%
Capital Costs	104%	96%	89%	82%	77%	71%	67%	63%	59%
Processing Costs	78%	78%	77%	77%	77%	76%	76%	75%	75%
Graphite Conc Purchase Price	83%	81%	80%	78%	77%	75%	73%	72%	70%
Purification	94%	90%	85%	81%	77%	72%	68%	63%	59%
Transport	83%	81%	80%	78%	77%	75%	73%	72%	70%
Plant Feedrate	56%	61%	66%	71%	77%	82%	86%	91%	96%

Key Project Metrics

Metric	Description / Assumption
Shipping through cost from Pemba port, Mozambique to Reno, Nevada	US$7,400 per 20ft container includes all USA clearance and import fees.
Transport cost of recarburiser by-product to New Jersey	US$249.25/t from Reno, Nevada to New Jersey
Mass transported in a 20ft container	18t = 20 bulka bags (nominally 1.2m^3)
Bulk density -106+38 micron graphite	0.85t/m^3
Power costs in Reno, Nevada	4.25 US cents /KWh
Power	Installed: 7,700KW Average Demand: 6,412KW
Purification / coating costs	US$3,000/t
Spherical Graphite	D_{50} 20 micron
Recarburiser by-product	Nominally minus 10 micron

Notes:

1) All costs and revenues quoted pre-tax
2) Costs are based on January, 2017 and are unescalated
3) All financials are in United States Dollars

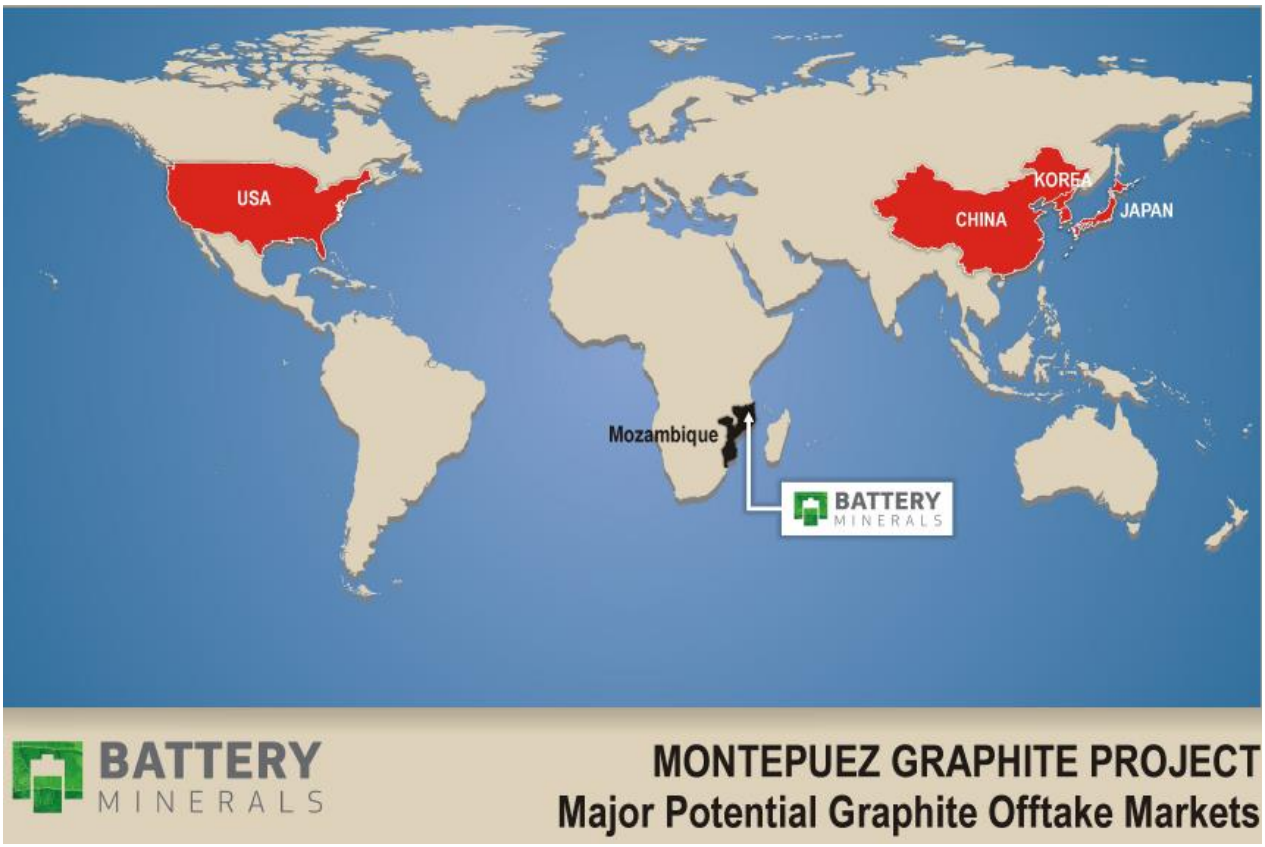
DFS and PFS Project Implementation - Project Delivery Schedule

The overall duration and sequence of the project is summarised below.

	2017				2018				2019			
Activity	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Montepuez Graphite Mine												
Definitive Feasibility Study												
Project Approvals												
Commencement			◆									
Design												
Procurement												
Construction												
Commissioning												
Ramp Up												
PSG Facility												
Definitive Feasibility Study												
Project Approvals												
Commencement					◆							
Design												
Procurement												
Construction												
Commissioning												
Ramp Up												

The PSG facility schedule has been developed such that commissioning of the PSG plant occurs in the quarter after the Montepuez Graphite mine completes commissioning. This will allow commissioning to be undertaken on the concentrate from Montepuez.

Marketing


USA
CHINA
KOREA
JAPAN
Mozambique
BATTERY
MINERALS
BATTERY
MINERALS
MONTEPUEZ GRAPHITE PROJECT
Major Potential Graphite Offtake Markets

Appendix 1 - consultants and contractors

a. DFS independent consultants and contractors

The following contractors were utilised as part of the DFS;

- Resource and hydrogeological drilling – Mitchell Drilling contractors Mozambique
- Resource Estimation and Classification – Snowden Mining Industry Consultants (Pty) (Snowden) completed for Buffalo deposit and Runge Pincock Minarco (RPM) for Elephant deposit.
- Resource to Reserve Estimation and Classification and life of mine design and scheduling – Snowden Mining Industry Consultants (Pty)
- Mine layout and design – Minnovo Pty Ltd
- Process Plant design – Minnovo Pty Ltd
- Mine estimation and financial modelling – Minnovo Pty Ltd
- Environmental Impact Assessment (including social) - Coastal Environmental Service .
- Hydrology, hydrogeology and Acid Mine Drainage Studies – Exigo
- Geotechnical field consultants – Middindi Consulting (Pty) Ltd
- Geotechnical civil design and assessment for the Tailings Storage Facility and Water Storage Dam – Knight Piesold
- Graphite product geometallurgical assessment – Minnovo Pty Ltd

The following laboratories were utilised as part of the DFS technical assessments;

- Geometallurgical, plant processing and concentrate variation testwork was conducted at ALS Metallurgy (Perth, Australia)
- Core samples were prepared at ALS Minerals (Chemex, South Africa) and were then analysed at ALS Global (Brisbane, Australia)
- Umpire laboratory testwork was conducted at Bureau Veritas Inspectorate Laboratories (Pty Ltd) (Johannesburg, South Africa)
- Environmental ICP and Acid Mine Drainage testwork was conducted at ALS Environmental (Perth, Brisbane, Australia)
- Fresh composite tailings analysis for the Waste Storage Facility was conducted at Intertek Genalysis (Perth, Australia) and was managed by Knight Piesold
- Surface and underground water testing was conducted at Waterlab laboratory (Pretoria, South Africa).
- Pit Geotechnical engineering testwork was conducted at Rocklabs (SMEC Group, South Africa)
- Infrastructure engineering testwork was conducted at Civilab Engineering and Testing Laboratory (Johannesburg, South Africa)
- Plant thickening and filtration testwork was conducted at Outotec (Perth, Australia)
- Flake analysis and liberation testwork was conducted at Actlabs (Ontario Canada)

b. PFS independent consultants and contractors

- PSG facility layout and design – Minnovo Pty Ltd
- Process Plant design – Minnovo Pty Ltd
- Capital and operating cost estimation and financial modelling – Minnovo Pty Ltd
- Shipping and Logistics study – Antrak Logistics in conjunction with Bollore Logistics
- High temperature purification expert consultants who requested to remain anonymous.
- Spheronisation and electrical capacity testing – Coulometrics.

Minnovo accepted BAT shares in lieu of some of their professional fees.

Appendix 2 –DFS - Key Non-Process Infrastructure

The DFS evaluation included the following Non-Process mine infrastructure.

1. **Power Station**
   Power will be generated on-site by six 1.4 MW high-speed generators for a total installed continuous capacity of 8.4 MW. Under normal conditions 4 generators will be running allowing for 1 on standby and 1 being maintained. The engines will be diesel fired and housed in a power station located at the process plant. The electrical output of the power station will be 11 kV, 3 phase, 50 Hz. The expected average power draw for the project is 4.2 MW.
2. **Accommodation Village**
   A 250 person accommodation village will be constructed approximately 3 km from the process plant. The village will comprise air conditioned motel style junior staff and senior staff accommodation, messing, laundry, commissary and other facilities including recreation facilities. The accommodation village will be constructed in three stages during the construction and mine commissioning phase.
3. **Site Development and roads**
   General two-way mine roads, unsealed 6m side carriageways with 1m wide shoulders and side drainage for all weather access shall be constructed. Borrow pits will be required to supplement fill quantities to construct the access roads. Minor access roads to the Tailings Storage Facility, Water Storage dam and powerlines etc. will have 4-5m carriageway constructed from compacted gravel. Haul roads will be 25m wide with 17.4m wide formation with select embankment where required, drains and windrows constructed for safety. General road access will also be constructed for the Processing Plant and Mine Services Facilities. Segregation of heavy and light vehicle traffic for safety purposes. Road drainage has been designed for one in fifty year rain in accordance with Knight Piesold's flood study. Open drains will be constructed around the mine services and processing facility and the accommodation village will drain using natural existing drainage courses.
4. **Water Supply and Distribution**
   Water supply requirements were evaluated as part of the DFS, each are summarised below
   - Raw Water; water will be pumped from the Water Storage Dam to a water storage tank at the plant and this water will then be piped to the Processing Plant and Accommodation Village.
   - Waste Water; all waste water shall be treated to meet relevant regulatory standards relating to effluent criteria. Waste water from the mine and processing facilities will be piped to the accommodation village treatment plant.
   - Potable Water; a potable treatment plant shall be installed at the accommodation village and the holding tank will provide an additional 30% reserve capacity for emergency fire water. Potable water will be piped to the Process Plant and Mine Services offices.
   - Fire water; fire water will be reticulated to each of the mine, process plant and village facilities and fire hydrants shall be installed to provide coverage to all buildings and facilities complying to building codes and standards. Maximum fire water storage volume is 290 kilolitres with electric pump and back-up diesel pump.
   - Landscaping Water; landscaping reticulation will be installed at the accommodation village covering 6Ha.

5. Diesel Storage Facility

A bulk storage facility will be provided by a contractor and will comprise eight 68,000L self-contained diesel storage tanks, this is sufficient to contain operations for 14 days at a consumption rate of 250,000 litres per week. 10 loads of fuel will need to be delivered to site each week and will be supplied by the contractor responsible for maintaining the fuel unloading, storage and delivery systems. Fuel shall supply the power station, generator tanks, process plant dryer and refueling of heavy and light vehicles. Pumps will operate at a rate of 700L per minute for light vehicles and 1,200L per minute for heavy vehicles.

6. Mine Buildings and Facilities

Additional mine and supporting building are summarised below;

- Mine office
- Heavy vehicle workshop
- Mine Contractors medical facilities
- Bulk Lubricant and hydrocarbon storage facility
- Tyre change facility
- Heavy and light vehicle refueling facility
- Heavy vehicle wash-down facility
- Light vehicle wash-down facility
- Oil water separation facility
- Water truck filling
- Light mobile equipment workshop
- Explosives compound
- Core logging facility
- Sample preparation
- Process plant building and facilities
- Gatehouse and security
- Emergency Response area
- Administration office
- Change house (toilets and clothes washing facilities)
- Plant office
- Training Room
- Control Room and communications building
- Lunch room
- Ablution building
- Site Medical Facility
- Workshop including mechanical workshop, boiler maker workshop, electrical workshop, instrument room, tool store, hydraulic store, dirty equipment area and repair equipment area.
- Warehouse
- Laboratory
- Vehicle wash-down facility
- Reagent store

7. Communication and Information Technology

Communications and Information Technology required to support the mine are listed below

- Corporate Voice and Data
- Internet connectivity and firewall
- Process plant control systems communication networks
- Site wide communications fibre cabling backbone
- Village communications backbone and services
- Plant technical applications
- Server infrastructure
- Limited village entertainment services

Corporate Voice and Data provided through a microwave tower link provided by a domestic telecommunications service provider. The tower will be located 4kms from the village and will provide communications to the offices, plant control room, plant switch rooms and accommodation village.

8. Security

Security systems shall include physical security in the form of fencing, gates and signage as well as manual gates and closed circuit television (CCTV). The explosive compound and magazine shall be fenced and manned by security guards 24 hours a day, 7 days a week. Standard industry practice explosive stock control will apply on a daily basis. A manual security gate will be installed at the Process Plant and Accommodation Village entry points.

9. Tailings Storage Facility (TSF)

The TSF is located adjacent to the plant site in a shallow valley which provides natural impoundment with a wall constructed at one end from a combination of mine waste and material excavated from within the tailings impoundment area. The TSF has been designed to accommodate an overall tailings capacity of 38.66 million tonnes of solids over the life of mine. Tailings will be pumped from the plant site at an average pulp density of 50% solids to a ring main system around the TSF and deposited via spigots.

Achieved densities range from ~ 1 to 1.5 t/m3 with an expected overall insitu settled density of 1.3 t/m3 adopted for design. Supernatant water release from the tailings mass, available for recycle into the process stream, is expected to be in the range of 25 – 30 % of water pumped in slurry to the TSF. The balance of water will be retained in the tailings, or will be lost to evaporation and groundwater seepage.

The tailings are relatively inert and geochemical analysis of tailings samples generated from the testwork program has shown that pH control is not required.

10. Water Storage Facility (WSF)

A WSF has been located to the south of the Process Plant on the Mecopêti River, a tributary of the Messalo River. The WSF will partially contain rainfall runoff from a significant natural catchment of ~ 40,000 Ha. Under average climatic conditions, in the order of 8 Mm3/yr of runoff is expected to discharge into the WSF. Peak monthly inflow is expected to occur through January – March each year at ~ 2 Mm3/month. Under 1 in 100yr ARI dry conditions, runoff reduces to 3.5 Mm3/yr with the peak inflow ~ 1Mm3/month. Under the design extreme storm conditions, peak inflow in the order of 2,600m3/sec has been estimated, resulting in a requirement for a significant spillway structure.

The WSF will provide raw water to the process plant and has been designed to store up to 2 Mm3 of water. The design of the WSF comprises a multi zoned earth fill embankment with a spillway sized to accommodate the critical duration Probable Maximum Precipitation (PMP) storm event. Construction materials for the embankment will be sourced from the spillway excavation with the proposed geometry a balanced cut to fill operation.

Appendix 3 – DFS Metallurgical Testwork Programs, Hydrology and Hydrogeology, Geotechnical Investigation, Environmental Assessment and Approvals and Mine Development Licensing Schedule

a. Metallurgical Testwork Programs

As part of the DFS several metallurgical testwork programmes have been completed on Montepuez Elephant and Buffalo ore deposits as summarised in the table below. Stages 1B, 2 and 3 were overseen by Minnovo during the DFS. The testwork targeted variable mine lithologies, variable weathering profiles and a range of graphite grades in the low, moderate and high grade ranges. Testwork concentrate grade and mine recoveries were included in the ore reserve calculations.

STAGE	DURATION	MANAGED BY	WORK BY	DESCRIPTION
1	Pre March 2016	RPM*	ALS, others	Exploratory test work bench scale flotation, mineralogy, flake size distribution
1A	March-June 2016	CPC**	ALS***	Bench scale flotation and regrind testwork for flowsheet development
1B	June-July 2016	MINNOVO	ALS	Additional bench scale testwork proposed after review of Stage 1 &1A to optimise grinding and flake distribution
2	July – Dec 2016	MINNOVO	ALS	Bulk sample testwork Buffalo and Elephant bulk samples
3	Sep – Jan 2016	MINNOVO	ALS	Geometallurgical variability testwork. Buffalo and Elephant drill core samples weathered and fresh.

* Runge Pincock Minarco
** CPC Engineering
*** ALS Global

1. Metallurgical Sampling

Stage 1B testwork was performed on composite BMS006 from Balama Central (Lennox deposit). Stage 1B testwork was primarily aimed at optimising comminution parameters and fines (minus 38 µm) grade/recovery. The Balama Lennox deposit was not included in the Montepuez Project development option considered in the DFS.

In Stage 2, nine near surface bulk samples were extracted from the Buffalo and Elephant deposits by trenching. By definition these samples represented weathered ore. Two bulk composite samples, one Buffalo and one Elephant, were formed from these samples, and were used in pilot scale work focused on concentrate production for marketing purposes.

Stage 3 samples for geometallurgical variability testwork were selected from drill cores from Buffalo and Elephant deposits, subject to selection criteria including head grade, lithology, weathering type, depth, and location to ensure representative sample selection. Drill holes sampled for variability testwork included Buffalo holes BF009D, BF011D, BF016D, BF017D, and BF018D and Elephant holes EL003D, EL010D, EL015D, EL016D, EL017D and EL020D.

2. Metallurgical Test Work Results

Based on the metallurgical testwork conducted and costing of the processing plant, the -38µm material is sent to tailings as it is currently considered uneconomic compared to the coarser flake products, therefore only the +38µm material is recovered to concentrate. The predicted TGC grade recovery relationship for each deposit was calculated using standard statistical analysis. The average recoveries for each deposit are summarised in the table below:

Deposit	Buffalo		Elephant	
Weathering Classification	Weathered	Fresh	Weathered	Fresh
TGC Recovery %	73.1	76.9	62.6	73.4

The average particle size distribution and grade obtained from the variability testwork is detailed below.

Micron (µm)	Retained %	TGC grade
+300	9.2	97.8
-300+180	25.7	97.8
-180+106	32.2	97.4
-106+38	32.9	95.5

Product Concentrate Proportion					
		Buffalo		Elephant	
Size Fraction	**Unit**	**Weathered**	**Fresh**	**Weathered**	**Fresh**
Size Fraction 38-108µm	%	46.20%	39.90%	50.90%	34.50%
Size Fraction 108-180µm	%	30.90%	30.70%	29.40%	31.70%
Size Fraction 180-300µm	%	16.70%	20.10%	15.40%	24.20%
Size Fraction +300µm	%	6.20%	9.30%	4.30%	9.60%
Total	%	100.00%	100.00%	100.00%	100.00%

ICP scans were performed on all concentrate produced from the geometallurgical variability testwork. These results were provided to potential offtake companies who confirmed that the concentrate and elemental impurity levels were within acceptable tolerances.

3. Acid Mine Drainage Assessment

Geochemical modelling assessment of waste rock dumps, ore stockpiles and the tailings storage facility has been completed with individual sample laboratory analysis and mineralogical assessments to determine the risk of acid mine leachate. Laboratory analysis included leachate and environmental analysis, acid neutralising capacity, net acid generation, total acid production potential and net acid production potential. 13 samples were sourced from Buffalo and Elephant core representative of typical fresh rock samples spread over the ore horizons where sulphide mineralogy is located, this was a preliminary assessment to determine the potential for acid mine leachate generation, in which the tailing storage facility was flagged as having potential. In addition to the tailing fresh and oxide sample analysis conducted by Knight Piesold (as part of the Tailings Facility Engineering assessment), a further four fresh tailings samples were analysed to exclusively simulate AMD potential generation within the Tailings Storage facility with QEMSCAN PMA analyses which assisted to characterise the mineralogy within the concentrate including buffer minerals.

Specialist geochemistry assessment predicted the rock waste dumps as slightly acidic at 5.6pH however in comparison to rainwater 5.5pH this is not considered an acid mine generation risk. The low grade stockpiles predicted a pH of 4.7 which is mildly acidic however the metal content does not exceed regulatory guidelines. Due to the variable oxidation states in a Tailings Storage Facility 3 zones were modelled separately, the upper oxide zone predicted leachate of 2.8pH which is acidic with elevated metals, the central transitional zone and lower residual zone predict pH of 5 which is not considered a risk.

In conclusion the Tailings Storage Facility will require some lining to prevent egress of acid mine drainage however phytoremediation methods have been recommended as a mitigation measure surrounding the Waste Rock Dumps and LG ore stockpiles including post mine closure. Water monitoring boreholes are proposed to monitor acid mine drainage potential down flow of the proposed structures.

4. Water Quality Analysis

12 baseline water samples were taken during the initial hydro census and were sent for micro and macro analyses at an accredited South African laboratory in August 2016 and a second round of water analysis was submitted at the end of the hydrogeological drill program in December 2016. Samples were taken from surface water bodies and boreholes spread over the proposed mine area. No analytical issues of concern were highlighted.

a. Hydrology and Hydrogeology

The hydrology and hydrogeology study comprised an introductory hydro census survey, aquifer characterisation and conceptualisation of the hydraulic regime within and surrounding the mine area. Investigations completed as part of the ground water assessment included the following inputs; a) review of available information and field evaluation b) ground geophysical survey in search of ground aquifers c) hydrogeology drill program 17 boreholes d) aquifer testing of water bore holes e) surface and borehole water sampling f) development of a flow model and g) acid mine drainage studies.

The hydrology and hydrogeology study outputs included development of a preliminary ground water flow model and geochemical assessment for each mine storage facility including the Tailings Storage Facility, Waste Rock Dumps and low grade stockpiles. A risking template was produced as part of the study and moderate impacts were noted.

Water for the mine is designed be supplied from the Water Storage Dam which is a valley fill dam designed to catch seasonal rains sufficient to supply the mine with year round water. The hydrogeology drill program deemed insufficient ground water supply is available to service the mine exclusively from ground water within the license area. BAT will continue to research ground water source options in 2017 for potential mine supply.

Other water supplies required for the mine include potable water for the accommodation village, this supply can be sourced from ground water or via treatment of water from the Water Storage Dam. Process Plant water supply will be recycled from the tailings thickener overflow and makeup water reclaimed from the tailings storage facility.

Site wide water balance and post mining closure drawdown studies are currently being finalised and will be submitted with the EIA assessment.

b. Geotechnical Investigation

Geotechnical investigations were completed for all infrastructure designs as summarised below;

- Geotechnical assessment of the Process Plant Site, Tailings Storage Facility and Water Storage Dam comprised 8 drill holes for 175m and 69 pits with rock samples submitted to Rocklab in South Africa.
- Elephant and Buffalo pit wall geotechnical study was completed by Snowden, field geotechnical logging and rock moisture analysis test was completed on site by Middindi Consulting (Pty) Ltd. The geotechnical studies were used to design the pit wall batter angles.

Engineering geotechnical investigations completed as part of the DFS is tabled below:

Description	Process Plant Site	Tailings Storage Facility	Water Storage Dam	Elephant Pit	Buffalo Pit
Test pitting	√	√	√	X	X
Borehole Drilling	√	√	√	√	√
Field Testing	√	√	√	√	√
Laboratory Testing	√	√	√	√	√
Piezometer testing	X	√	√	X	X

The geotechnical testwork results showed that the selected locations for the plant and infrastructure were acceptable. Geotechnical pit studies concluded the mine batter angles for Buffalo pit is 38 ° in Saprolite and 45-48° in weathered and fresh rock and for Elephant is 42° in Saprolite and the same as Buffalo in the weathered and fresh rock horizons.

c. Environmental Assessment and Approvals

BAT is well advanced with the Environmental Impact Assessment (EIA) which is a legislated requirement in Mozambique prior to Mine Concession approval. Preliminary Environmental and Social reports and risk assessments have been completed and no extreme risks have been identified to date and various mitigation measures are currently under study. Successful acceptance of the EIA is required to obtain an Environmental License, whereby construction and mining cannot commence without the Environmental license.

Specialist survey reports include; Vegetation Report, Faunal Report, Land and Natural Resource Use, Surface Water and Aquatic Assessment, Traffic Impact Assessment, Social Impact Assessment and Geohydrology and Geochemistry (including AMD studies).

There are no homes on the Exploration license or proposed infrastructure areas and therefore no resettlement studies are required as part of the EIA. There are however some small agricultural holdings in the central license area and BAT plan to hire local expertise to devise methodology to best manage the agricultural holdings ensuring house hold income is maintained.

d. Mine Development Licensing Schedule

Development of the mine is contingent on obtaining a Mining Concession Approval, Environmental License, Water License and Land Holding (locally referred DUAT).

BAT anticipate to have responses for all license applications by CAL2017 Q4, this timeline however is contingent on government administrative processing and approvals granted.

Appendix 4 – DFS Project Implementation

1. Project Delivery Schedule – Timeline

The overall duration and sequence of the project is summarised below.

Activity	2017				2018				2019			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Definitive Feas Study												
Project Approvals												
Commencement			◆									
Design												
Procurement												
Construction												
Commissioning												
Ramp Up												

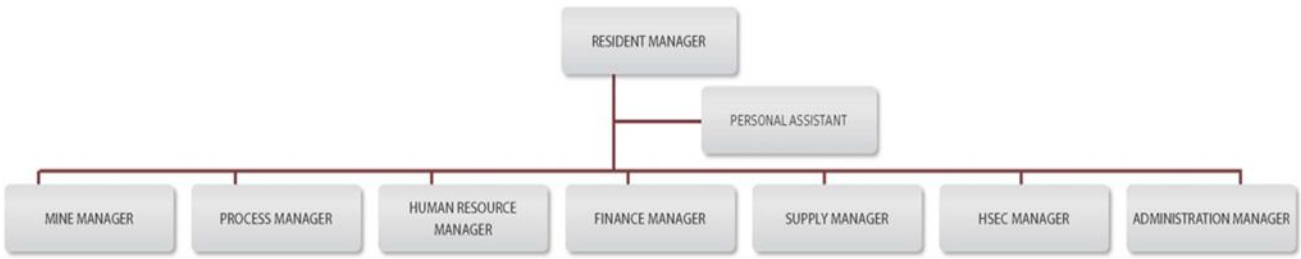
2. Execution Strategy

The project execution strategy adopted for the DFS was to perform the project implementation under an EPCM contracting model with key consultants engaged to prepare detailed design and specifications of the mine, the process plant and all non-process infrastructure respectively. The EPCM consultant would provide procurement, construction management, and commissioning services to assist BAT to deliver the project. BAT would also arrange and manage some contracts directly. BAT will review and consider alternative contracting models during the project approvals phase.

3. Project Management Consultant (PMC)

A PMC will be engaged to assist BAT with the management and reporting of the project. The PMC will administer key contracts on behalf of BAT to ensure that the scope of each contract is delivered in accordance with budget, schedule and quality requirements.

4. Project Organisation Model



5. Procurement and Contracting Strategy

Equipment packages will either be procured direct by BAT and free issued to contractors for installation under and EPCM model, or will be included in an EPC contractor's scope to supply. Buildings on the plant site and at the accommodation village will be supplied and installed by a builder with bulk commodities (earthworks, concrete, steel, plate-work, piping, electrical, etc) supplied and installed by various construction contractors. Construction contracts will be let to suitably experienced African contractors for the process plant and infrastructure packages respectively.

It is intended that the diesel fired power station and the bulk diesel fuel facility will be built, operated and maintained under a long term services contract with a mechanism to transfer assets to ownership of BAT at an agreed time.

Key services contracts will be let to support operations such as the mining, drill and blast, concentrate logistics, and catering services.

6. Process Plant/ECI/EPC/EPCM

BAT will select a contract model for delivery of the process plant and associated infrastructure during the project approvals phase. The process plant design/construction will be tendered during the pre-project approval phase with the preferred contractor selected prior to formal project approval so that engineering design and procurement work can commence immediately following project approval.

7. Operational Philosophy

The mine will operate 24 hours per day, 7 days per week on a roster basis with fly in-fly out for staff not resident in Cabo Delgado province. Shift workers will work an 8 hour shift with three shifts per day.

BAT will provide all personnel to operate and maintain the process plant and non-process infrastructure except for the mining contractor, the power station operator, and the accommodation village services provider, who will engage the personnel required to deliver these services.

The mining contractor will provide all mine contractor facilities and the mining fleet. Explosives supply may be undertaken by the mining contractor or by BAT.

BAT will procure an earthmoving fleet which it will operate and maintain during the project construction phase and for the duration of operations. This fleet will support the construction efforts of the main access road and will be used for lifts on the tailings storage facility and for maintaining the access road from Montepuez to the mine site.

Concentrate haulage, consolidation, and all terminal handling into containers and onto ship (FOB Pemba) will be performed by a logistics contractor.

Appendix 5 – Adjustment applied for freight costs

The Benchmark Mineral Intelligence report has been presented with pricing on a CIF Europe basis. In order to align the product pricing shipping basis with the project definitive feasibility study (FOB Pemba) the following steps were taken:

- Obtain budget pricing for sea freight for China – Europe and Mozambique – China. Prices obtained were China-Europe $1450 and Mozambique – China $500 per 40' (22tonne) container.
- Assumptions made that the product pricing FOB China and CIF China are equivalent
- Deduct the sea freight budget price China – Europe from the Benchmark pricing.
  $1450 / 22t = $66/t
- Deduct the sea freight budget price Mozambique – China from the Benchmark pricing.
  $500 / 22t = $23/t

Based on the above logic each price was adjusted by deducting $89/t from the Benchmark report pricing to arrive at a calculated FOB Pemba price for the purposes of the Definitive Feasibility Study. This approach is likely to understate pricing however is reflective of the market referencing China as the largest producer of flake graphite.