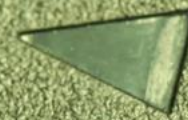




**BATTERY**  
MINERALS



Li-ion BATTERY

Corporate Presentation, March 2017

# *The Green Energy Storage Revolution is Now*



- BAT is at the forefront of this 21st Century energy disruption
- Purified Spherical Graphite (PSG) is the key component for Lithium Ion ("Anode") Batteries (LiB's)
- PSG was previously predominantly derived from synthetic (manufactured) graphite ...but this is too expensive when compared to naturally occurring graphite
- LiB's already power mobile phones, laptops, home energy storage systems, cars and heavy vehicles...they are everywhere and are expanding exponentially
- Energy storage will enhance renewable energy system or potentially replace conventional energy sources
- To accelerate the transformation of the world's energy storage systems, PSG will be a catalyst
- BAT considers it has superior, consistently high quality Graphite that is ideally suited for the battery sector
- BAT is generating its PSG utilising heat (hydro powered) Vs conventional HF+HCL acid – adding to its 'green' appeal
- The anode qualification period with battery companies is lengthy, BAT is leading this race and is already producing anode material at our shared US based spherical graphite pilot plant
- BAT offers fully traceable environmentally friendly anode material – from mine to battery

So what is graphite and how do you get it from the ground into a battery?

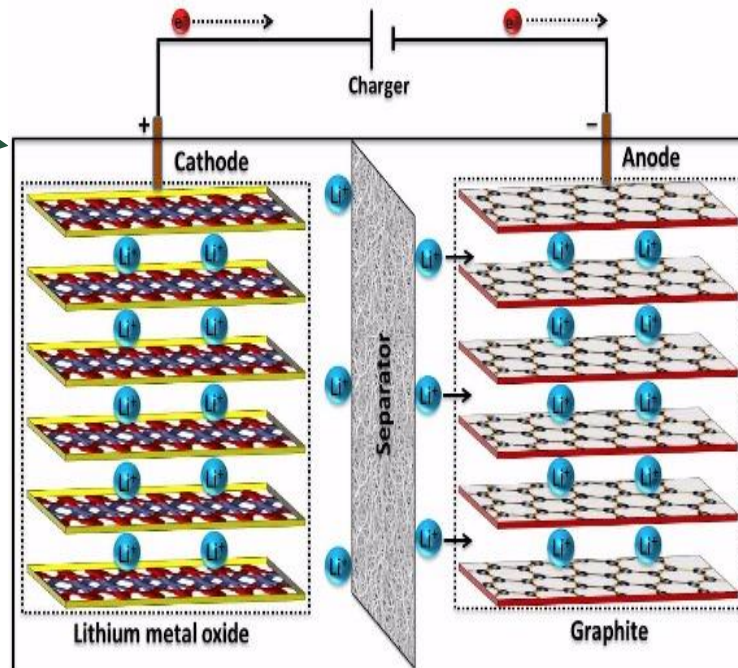


# Anodes for Lithium-Ion Batteries

- Battery Minerals Limited ("Battery", ASX:BAT) is an Australian listed public company which aims to be a major producer of purified spherical graphite ("PSG") for use as anode material in lithium-ion batteries ("LIBs")
- LIBs are common in home electronics and are also growing in popularity for military, aerospace applications, and electric vehicles. They are a common replacement for lead-acid batteries in motor vehicles. The market for LIBs is forecast to grow exponentially
- PSG is compatible for use in LIBs

## Cathode (positive battery terminal)

- The cathode in a LIB is generally one of 3 forms of lithium based material
- Layered oxide (such as lithium cobalt oxide), a polyanion (such as lithium iron phosphate) or a spinel (such as lithium manganese oxide)
- Demand for cathode materials has driven a significant price spike in lithium and publicly listed lithium focussed companies



## Anode (negative battery terminal)

- The anode is predominantly composed of graphite, which is a form of carbon
- Graphite is highly conductive
- Graphite can reversibly place lithium-ions between its many layers
- The carbon surface must be compatible with the LIB for efficiency – spherical graphite is highly compatible
- BAT is targeting production of 20,000 tpa of battery grade PSG in the USA

# Impact of the Booming Market

- Tesla Model 3 to be released in mid 2017, retail price of US\$36,000. There are >400,000 paid deposit orders already
- The battery unit in each Tesla Model 3 is expected to weigh approx. 350kg
- **PSG comprises ~16% of each battery unit, implying ~53.8kg of PSG per car**
- Assuming 1 million Tesla's produced per annum, that equates to 53,800t of PSG demand (excluding other uses)
- To produce 53,800t per annum of PSG requires mining of approximately 12-20 million tonnes of graphite ore per annum (depending on grade and recovery factors)
- Tesla is just one of many heavily invested in electric vehicles (EV's)

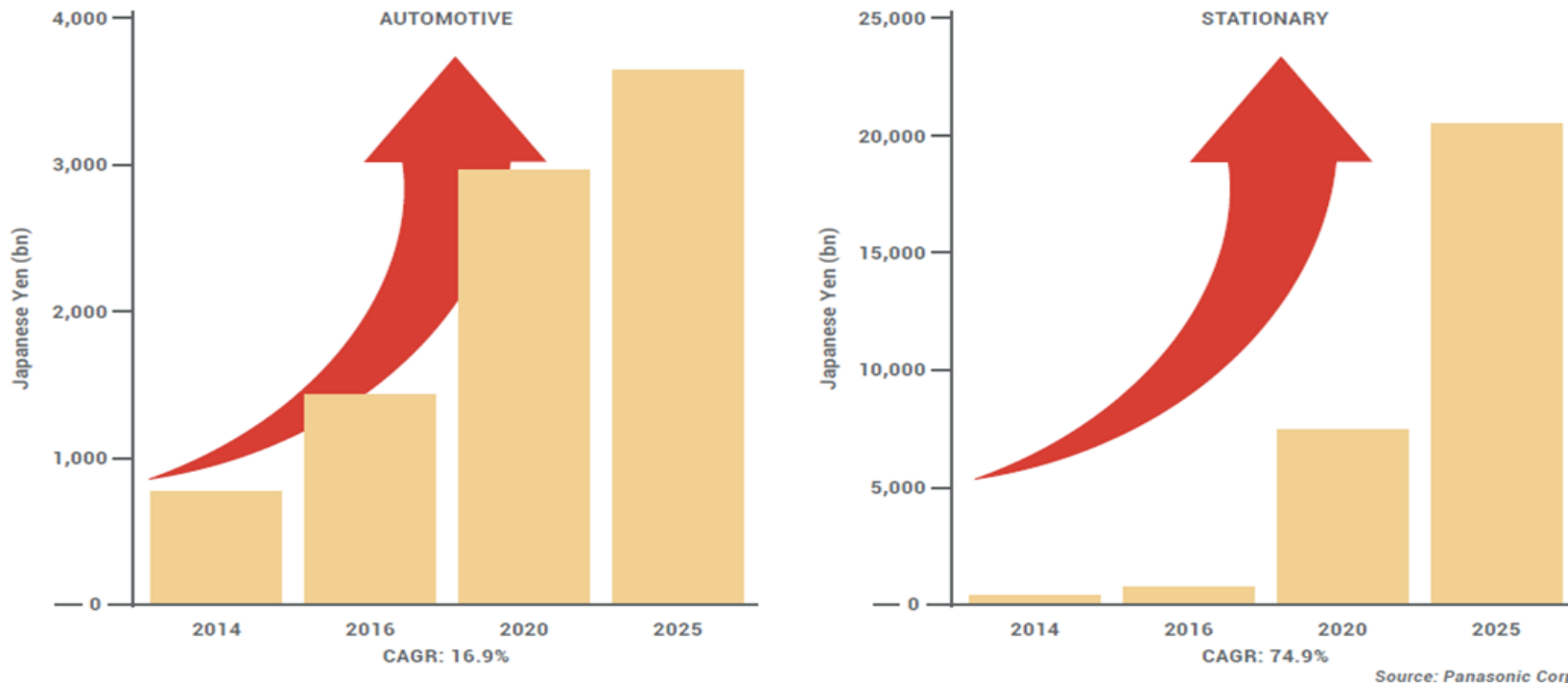


- Mercedes, BMW, Audi, Volkswagen are all slated to release new EVs in 2017/2018
- China, Japan and Korean Government policy strongly supports EVs with large rebates, zero sales tax and free licensing
- Toyota are looking to cease using lead acid batteries, likely by 2020, with adoption of Li ion batteries in all models
- Japanese and Korean car makers anticipated to announce major adoption of EVs by 2020
- 1 million EVs in Korea expected by 2020
- 1 million Chinese electric bus project approved and on track
- Google and Apple are both investing in EV's/operating systems

Note: The battery unit in each Tesla Model S Configuration consumes 76.3kg per vehicle

- Lithium-ion battery (LIB) market expected to grow from US\$10bil to +US\$60Bil in the next 10 years

PANASONIC'S FORECASTED GROWTH IN LITHIUM-ION BATTERIES



- ✓ LIB materials market is expected to make up +US\$30bil of this number, up from US\$1bil in 2016
- ✓ Rapid growth in electric vehicles (eg Tesla) and home storage/ grid storage (renewable energy)
- ✓ Panasonic is predicting significant growth in emerging markets for lithium-ion batteries
- ✓ Renewable energy battery storage will revolutionise the energy sector



**BATTERY**  
MINERALS

## *Company Overview*

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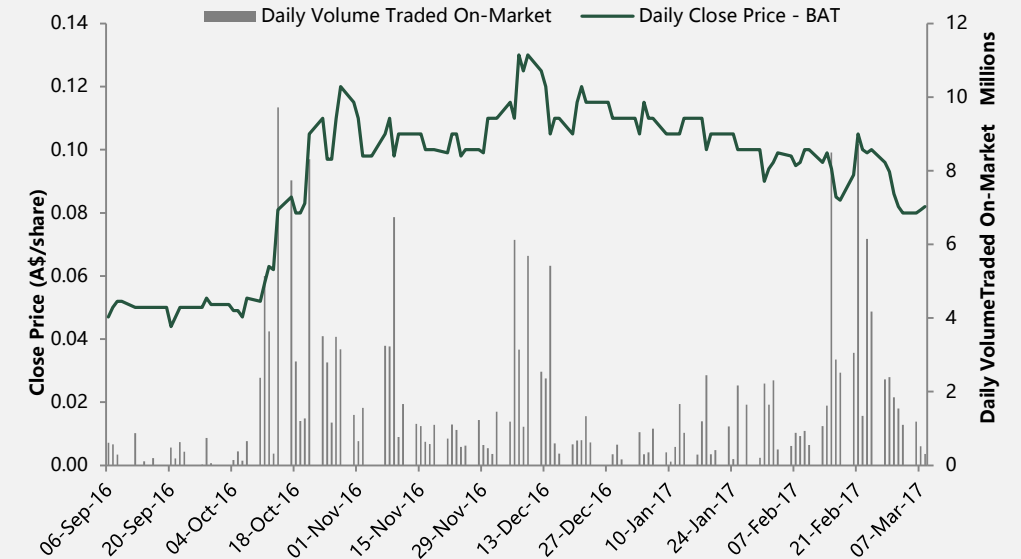
## ASX: BAT

Shares on issue:	426M
Market capitalisation:	~\$47M <sup>(2)</sup>
Cash at bank:	\$9.7M <sup>(1)</sup>
Current share price:	\$0.11 <sup>(2)</sup>
Trading range (12 week):	\$0.09 - \$0.14 per share
Options on issue:	50.8M unlisted (various terms)
Major shareholders:	<ul style="list-style-type: none"><li>• Farjoy (12.6%),</li><li>• Contango (5.1%)</li><li>• Mitchell Group (4.4%),</li><li>• Directors and management (&gt;10% fully diluted)</li></ul>

(1) 31 December 2016

(2) 10 February 2017

## Share Price



## Corporate Presence

Head Office: West Perth, Australia

Country Office: Maputo, Mozambique

Technical and Marketing: Tahoe, USA

# Highly Experienced Board & Management



*Many decades of exploration, development and production experience*

## **David Flanagan**

### **Non Executive Chairman - BSc WASM**

- 25 years resources industry experience in Australia, Africa and Asia
- Experienced ASX Director, Chairman and MD of ASX 100 company
- Proven capability to transition from explorer to major producer

## **Cherie Leeden**

### **Managing Director - BSc Hons**

- Founder, Geologist, successful explorer and developer of mineral resources
- Extensive graphite markets and technical battery anode knowledge. Experience working for majors/juniors. Predominantly African based and focussed for past 5 years

## **Gilbert George**

### **Non Executive Director - MEd**

- Experienced public company director
- >30 years international business experience, particularly Japan
- Involved in +\$1bn worth of transactions funding resources projects

## **Brett Smith**

### **Non Executive Director - BSc Hons**

- Geologist
- 25 years experience in exploration and resource definition
- Experienced public company director

## **Management Team**

### **David Riekie**

General Manager - Corporate

### **Tony Walsh**

General Manager – Special Projects & Joint  
Company Secretary

### **Jackie Rose**

Administration Manager

### **Regina Molloy**

DFS Project Manager

### **Steven Cancio-Newton**

Exploration Manager

### **Steven Wood**

CFO and Company Secretary





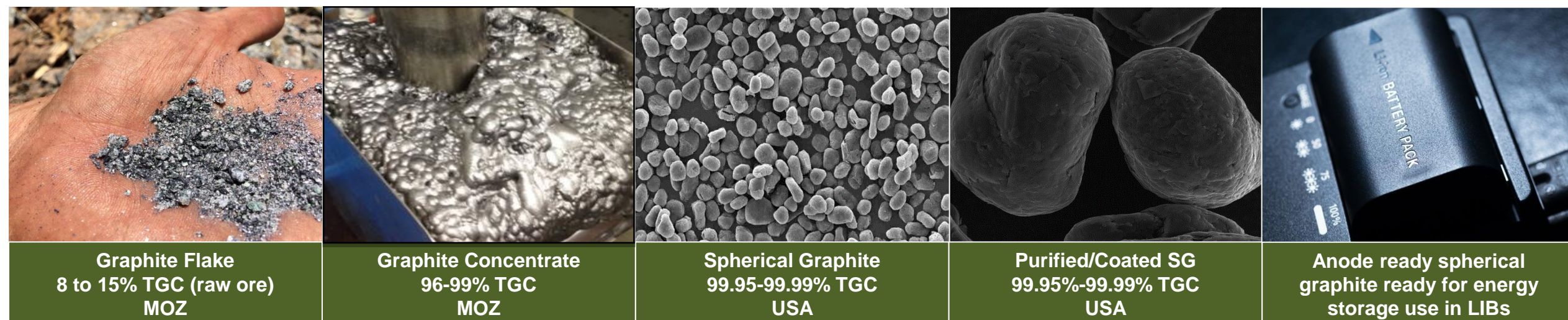
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## *Mining & Processing of Spherical Graphite*

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# Pathway: Flake to Coated Spherical Graphite

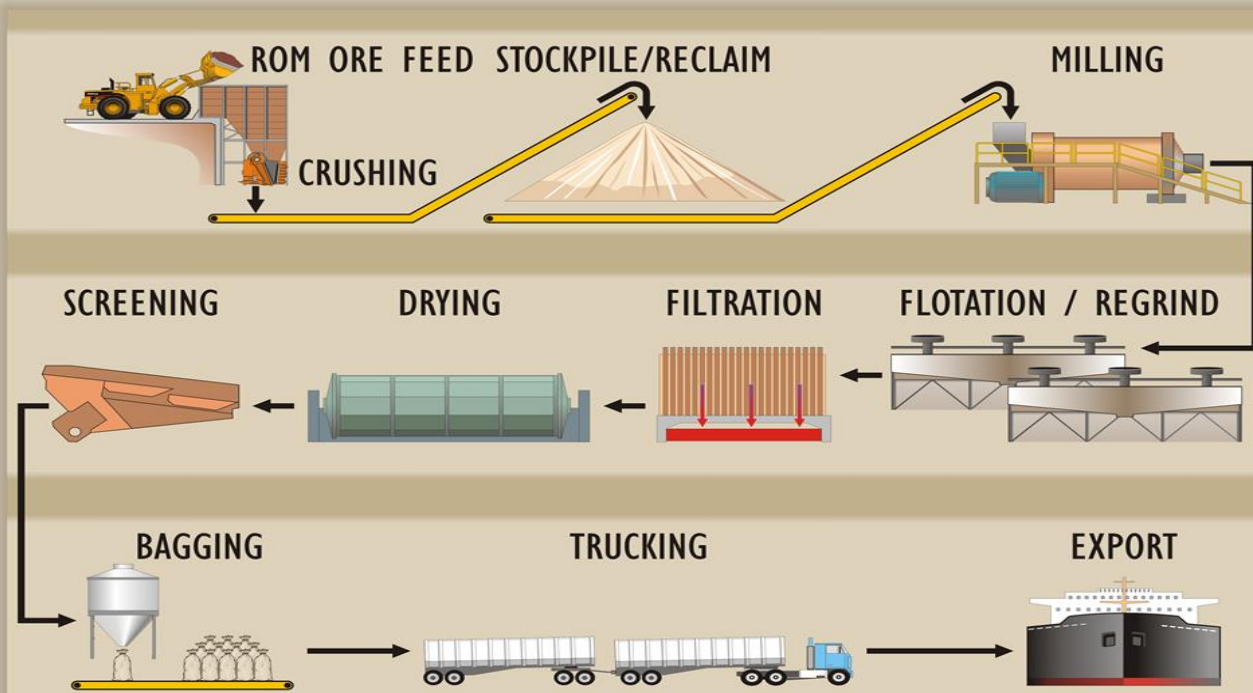
- BAT understands how to mine and process graphite to create a product suitable for the booming LIB market
- Vertical integration captures downstream profit margins



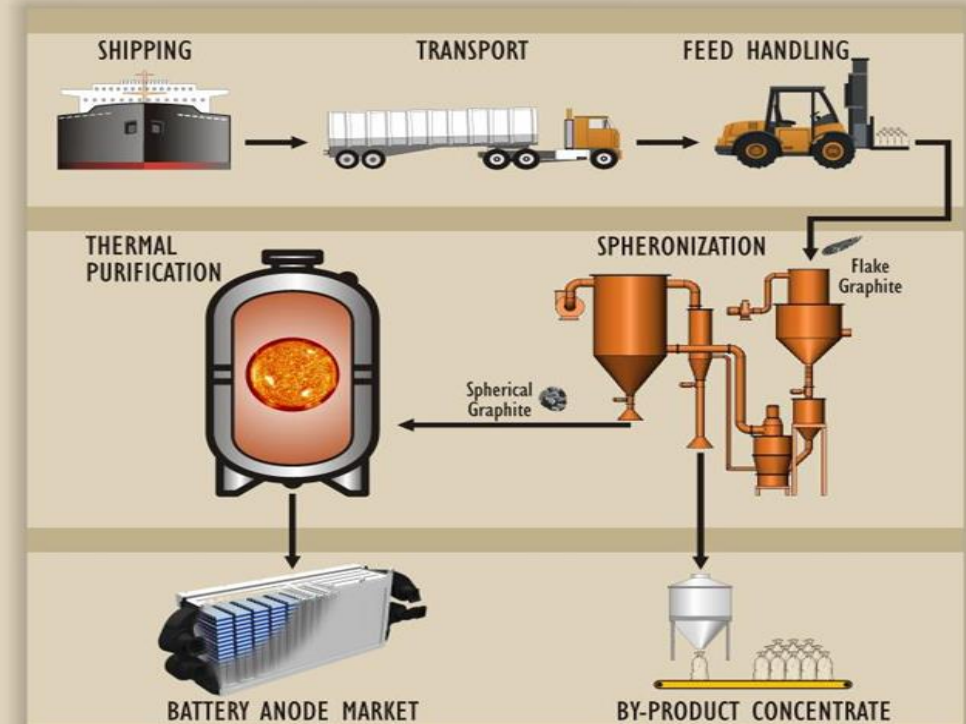
*From the mine to the gigafactory*



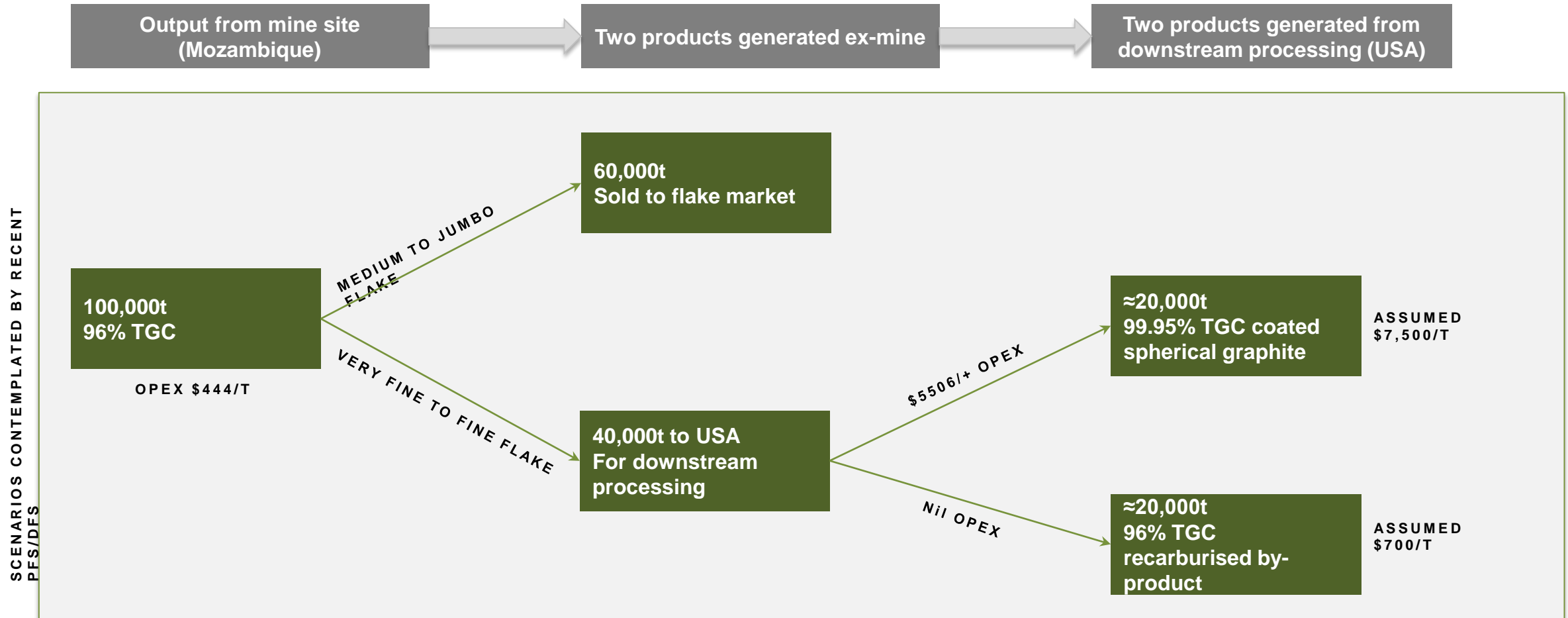
## Mining & Export



## Processing of Spherical Graphite



# Process Pathway



## *Investigating opportunities to*

- (1) increase mine concentrate grade from 96% to 99%TGC with use of attrition cells,*
- (2) consider initial smaller output to reduce capex and opex, and*
- (3) downstream processing of mine output*



# Mine Location & Infrastructure Benefits



- Two graphite projects located in the Cabo Delgado province of Mozambique in East Africa
- Significant graphite export operations/ capacity
- Excellent logistics: only 260km to Pemba port via existing roads
- Modern mining act and pro-mining government
- Stable multi-party democracy since 1994



# Summary of Consolidated Study

	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) 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 concentrate assumed basket price	US\$7,500/t 99.99% PSG US\$700/t recarburiser product	US\$798/t
LoM operating cash cost	US\$5,506 per tonne of PSG	US\$444/t of product (FOB)
Mine life **		30 years

	Consolidated Project Outcomes
Consolidated net revenue	US\$7,120 million LOM (US\$237m per annum)
Consolidated operating cashflow	US\$2,368 million LOM (US\$79m per annum)
Net Present Value (NPV <sub>10</sub> )	<b>US\$524 million</b>
Internal Rate of Return (IRR)	36.2%
Consolidated payback period	3 years
Consolidated capex	<b>US\$168 million</b>

\*- 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)

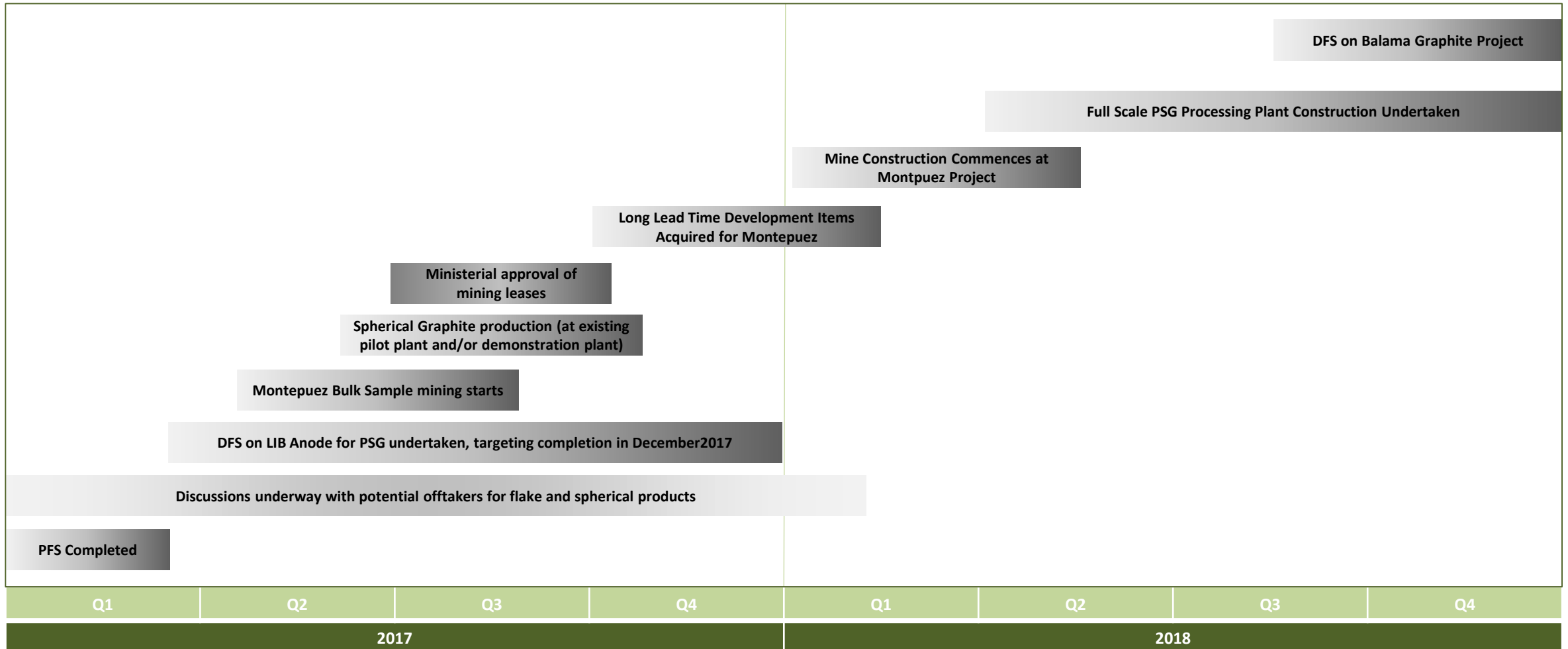
\*\*\*- DFS (+/-15%) and PFS (+/- 30%)

## **BAT has already identified a range of value enhancement opportunities**

- Demonstration plant in 2017 will enable refinement of study inputs:
  - Significant sample tonnage will enable a greater refinement of processing costs
  - Project is highly leveraged to the cost of spheronisation and purification
- Expenditure reductions:
  - Transport opex
  - Equipment capex (access to identified second-hand kit to reduce capex)
  - Reduction of PSG purification costs via the delivery of a higher grade concentrate
- Optimisation of:
  - mine throughput grade and recovery
  - timing of start-up of the PSG facility
  - Metallurgical testwork targeting grade and recovery improvements.
- Investigate and source local tax, research and development incentives
- Investigate purchase of purification equipment Vs toll treatment
- Investigate US based spherical graphite demonstration plant commissioning in 2017

# Significant Upcoming Milestones to Drive Value

- The next 12-24 months contains some significant milestones for BAT





# Montepuez Ore Reserves and Mineral Resources



- Ore Reserve Estimate January 2017 for Buffalo and Elephant deposits is **41.4Mt @ 8.80% TGC for 3.64Mt** of graphite reported at a cut-off grade of 4% TGC
- Total Mineral Resource January 2017 for Buffalo and Elephant deposits is **105.9Mt @ 7.74% TGC for 8.2Mt** of graphite reported at a 2.5% TGC cut-off
- Two world class deposits provide optionality of product, blending opportunities and development options
- Flake size, creates opportunity for price premium Natural Flake products
- Chemical structure and easy liberation attributes (low impurities) offers unique opportunities
- The graphite resources remain open in every direction ensuring mine life opportunity beyond the currently scheduled 30 years

MONTEPUEZ GRAPHITE PROJECT – ORE RESERVE STATEMENT @ 4% TGC cut-off - January 2017				
Ore Type	Classification	Ore Reserve	TGC	Contained Graphite
		Mt	%	Mt
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.

# Disclaimer & Competent Persons Statement



## Forward Looking Statements

- Statements and material contained in this Presentation, 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.

## Cautionary Statement

- The Company advises that a proportion of the production target referred to in this announcement is based on an inferred mineral resource. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised. Further detail around Concept Study included in ASX announcement dated 10 February 2016. The Company confirms that the material assumptions underpinning the production target in the Concept Study have not materially changed since first

reported, pursuant to ASX listing rule 5.19.

## Competent Persons Statement

- The Montepuez Graphite Project Maiden Mineral Resource was released to the ASX 16th November 2015 for the Buffalo, Elephant and Lion deposits. This presentation includes a second Mineral Resource announcement exclusively for the Buffalo and Elephant deposits released on 15 February 2017. The Buffalo and Elephant Mineral Resources were updated on 15 February 2017 to include additional drill holes and lithological domains for Ore Reserve conversion as part of the Definitive Feasibility Study.
- In the 15 February 2017 announcement, Ms Cherie Leeden, Managing Director of BAT compiled the information in Section 1 and Section 2 of the following JORC Table 1 and is the Competent Person for those sections. In the 15 February 2017 announcement, two separate Section 3 tables are provided for each of the Buffalo and Elephant Resource estimations and classifications, one prepared by Mr Mark Burnett, an employee of Snowden Mining Industry Consultants (Pty) Limited (Snowden) and is the Competent Person for the Buffalo Resource estimation and one prepared by Mr Robert Dennis, an employee of RungePincockMinarco Limited (RPM) whom is the Competent Person for the Elephant Resource estimation. In the 15 February 2017 announcement, Mr Geoff Davidson compiled information in Section

4 for the combined Buffalo and Elephant Ore Reserve estimate, Mr Davidson is an associate of Snowden and a Fellow of the AusIMM and is the Competent Person for the combined Buffalo and Elephant Ore Reserve. The 15 February 2017 announcement, advised that in assessing the appropriateness of the Ore Reserve estimate, Mr Davidson has relied on various reports, from both internal and external sources, in either draft or final version, which form part of or contribute to the DFS. These reports are understood to be compiled by persons considered by BAT to be competent in the field on which they have reported.

**Cherie Leeden**  
**Managing Director**  
**Battery Minerals Limited**  
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