



**BLACK ROCK**  
MINING LIMITED

# Developing the World Class Mahenge Graphite Mine

AGM PRESENTATION

30 NOVEMBER 2016

BLACK ROCK MINING – INDUSTRY LEADING LOW CAPEX,  
HIGH MARGIN, PUREST GRAPHITE GLOBALLY,  
MULTI GENERATIONAL MINE

# Disclaimer



The release, publication or distribution of this presentation in certain jurisdictions may be restricted by law and therefore persons in such jurisdictions into which this presentation is released, published or distributed should inform themselves about and observe such restrictions.

## **DISCLAIMER**

This presentation is for informational purposes only and does not constitute an offer to sell, or solicitation to purchase, any securities. Such Offer can be made only through proper subscription documentation and only to investors meeting strict suitability requirements. Any failure to comply with these restrictions may constitute a violation of applicable securities laws. In providing this presentation Black Rock has not considered the financial position or needs of the recipient. Persons needing advice should consult their stockbroker, bank manager, solicitor, attorney, accountant or other independent financial and legal advisors.

## **FORWARD LOOKING STATEMENTS**

Various statements in this presentation constitute statements relating to intentions, future acts and events. Such statements are generally classified as “forward looking statements” and involve known and unknown risks, uncertainties and other important factors that could cause those future acts, events and circumstances to differ materially from what is presented or implicitly portrayed herein. Words such as “anticipates”, “expects”, “intends”, “plans”, “believes”, “seeks”, “estimates” and similar expressions are intended to identify forward-looking statements. Black Rock caution shareholders and prospective shareholders not to place undue reliance on these forward-looking statements, which reflect the view of Black Rock only as of the date of this presentation. The forward-looking statements made in this presentation relate only to events as of the date on which the statements are made.

## **COMPETENT PERSONS**

The information in this report that relates to Exploration Results and Mineral Resource Statements is based on information compiled by Steven Tambanis, who is a member of the AusIMM. He is an employee of Black Rock Mining Limited. Steven Tambanis has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 and 2012 Edition of the ‘Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves’.

The information that relates to Mineral Resources is based on and fairly represents information compiled by Mr Lauritz Barnes, (Consultant with Trepanier Pty Ltd) and Mr Aidan Platel (Consultant with Platel Consulting Pty Ltd). Mr Barnes and Mr Platel are members of the Australian Institute of Mining and Metallurgy and have sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to the activities undertaken to qualify as Competent Persons as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Barnes, Mr Platel and Mr Tambanis consent to the inclusion in this report of the matters based on their information in the form and context in which they appear.

# Table of Contents



1. Overview
  2. Corporate Summary
  3. The Opportunity
  4. The Project
  5. Why Black Rock Mining?
  6. 2016 – Laying the Platform
  7. 2017 – Execution
  8. Summary
- Appendices

# 1. Overview



- Black Rock Mining is developing its World Class Mahenge Graphite Project in Tanzania
- The Mahenge Project benefits from relatively high grades, low strip ratios, a large resource and very simple metallurgy, allowing long term low cost operation and downstream margin enhancement options.
- Its competitive advantages can be summarised as:
  - **Industry leading low pre production capex;**
  - **Low opex, high margin;**
  - **Excellent graphite product attributes, sector leading purity, quality;**
  - **Small environmental footprint; and**
  - **Multi generational mine**
- 2016 established a positive growth platform by the Company. A World Class resource was announced, a compelling scoping study released and detailed product testing demonstrating excellent characteristics for batteries and high end applications.
- 2017 will see the focus shift from exploration activities to development: building in-Country construction and operational capabilities, commencing detailed engineering and preparing for construction of a low cost graphite mine.

## 2. Corporate Summary



### Capital Structure

Share Price	A\$0.15
Shares on Issue	323m
Quoted Options on Issue	75m
Market Capitalisation	A\$48M
Cash in Bank <small>Nov16</small>	A\$3.5M
Options expiring 25Mar17	A\$2.0M
Directors Holding	29%

### 6 Month Price Performance



### Board and Management

#### Stephen Copulos (Chairman)

- +30 years experience across a wide range of industries including mining, manufacturing, property, fast food and hospitality.
- Chairman of Crusader Resources Limited (ASX:CAS), Consolidated Zinc Limited (ASX:CZL) and Non-Executive Director of Restaurant Brands, NZ

#### Steve Tambanis (Managing Director)

- Geologist with extensive commercial and operational experience in the resources industry including business development at WMC Resources.

#### Gabriel Chiappini (Director & Company Secretary)

- Chartered Accountant and member of Australian Institute of Company Directors with extensive experience as Director and Company Secretary to ASX listed companies.
- Director of Fastbrick Robotics Ltd (ASX:FBR), Sunbird Energy Ltd (ASX:SNY), Scotgold Resources Limited (ASX:SGZ) and Global Geoscience Ltd (ASX:GSC)

### 3. The Opportunity



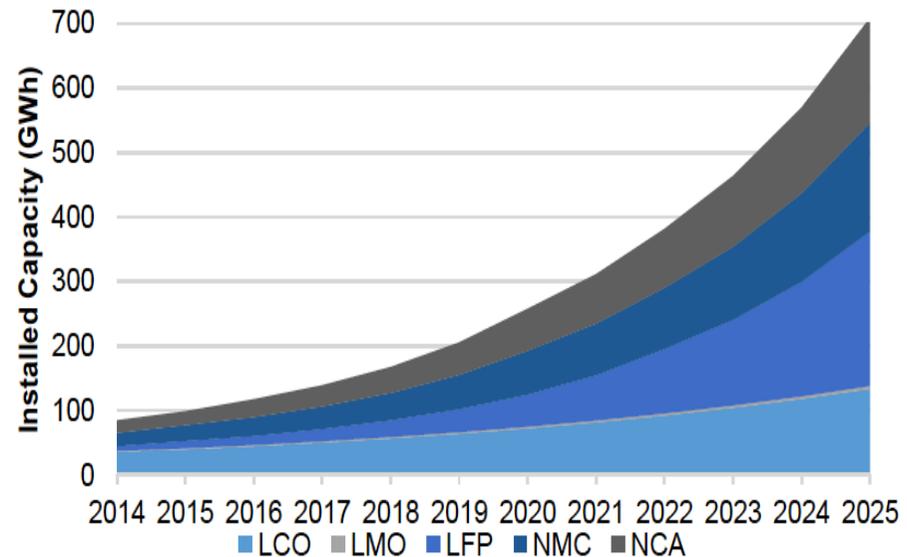
Current global graphite market size is around 3m tonnes per annum with 40% natural flakes and 60% synthetic graphite.

Battery anode market accounted for 100k tonnes in 2015.

Many commentators expect this market to grow at over 20% per annum through to at least 2025 (refer Canaccord Genuity estimate of 23% CAGR in November 2016).

The current battery anode market of 50% natural and 50% synthetic is expected to change in favour of natural graphite due to advantageous cost, quality and improved consistency.

Figure 38: Installed Battery Capacity by Cathode type



Source: Company Reports, Canaccord Genuity estimates

Source: Canaccord Genuity, 20 November 2016

# 4. The Project



The Mahenge Project is located in Tanzania with close proximity to rail infrastructure through to port

60km from Ifakara railhead to the Port of Dar es Salaam

Mains power to site – discussions underway for powerline upgrade



Image showing project location in Tanzania

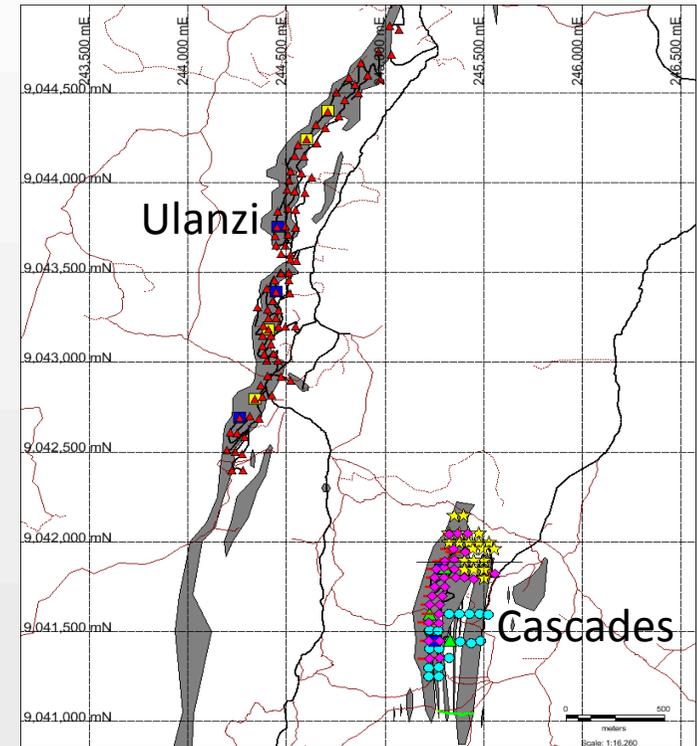


Image showing Ulanzi and Cascades localities. Cascades drilling is complete with the announcement of a resource expected in December 2016

## 4. The Project – orebodies



Ulanzi was the subject of the Company's current Scoping Study.

JORC Resource of 162.5m tonnes at 7.8% TGC including a high grade core of 38.7m tonnes at 9.9% TGC\*.

A project Scoping Study completed in March 2016 provided high level capital costs of US\$60m for a 50,000 tpa operation and cash costs circa \$500/t.

Detailed testing of Ulanzi mineralisation has returned consistent 98-99% TGC concentrate purities.

Cascades is likely to be a stand-alone Mineral Resource given coarser flake size and expected higher grades than Ulanzi

Cascades Mineral Resource is expected in early December.

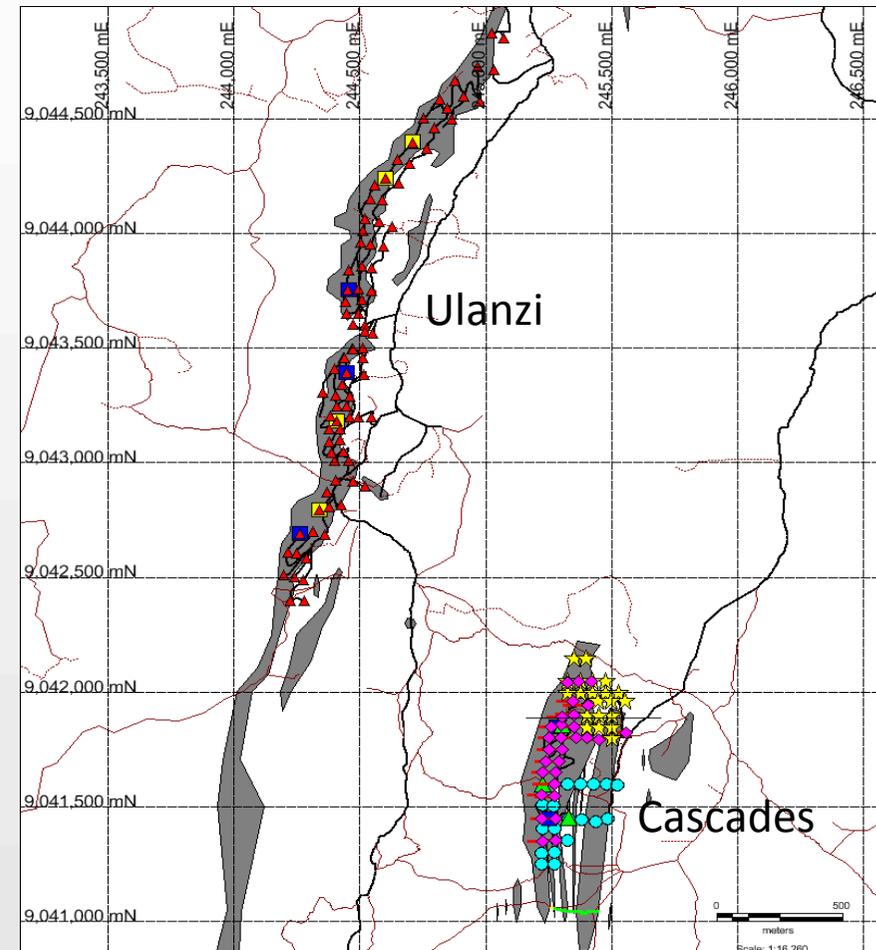
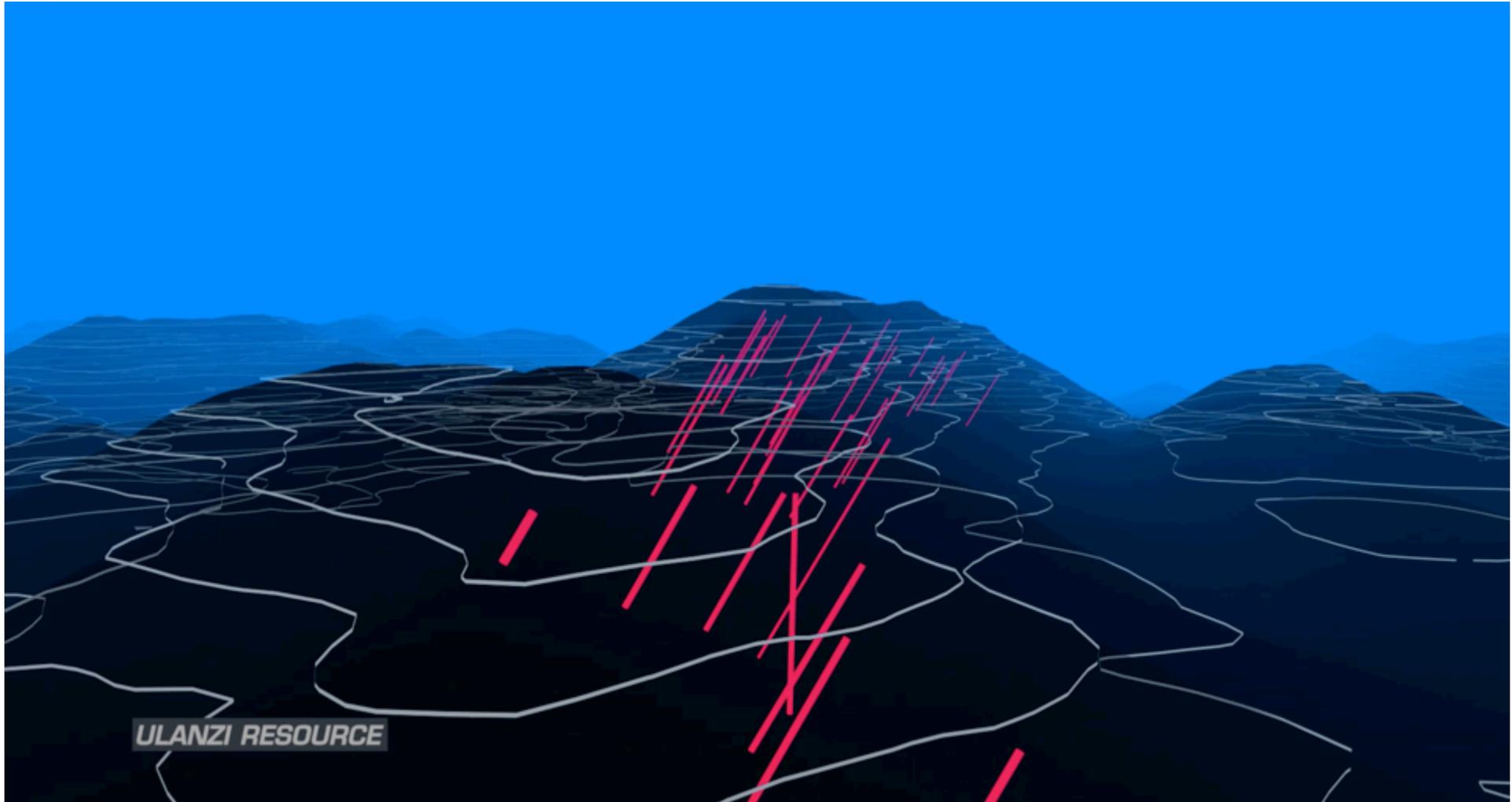


Image showing Ulanzi and Cascades localities

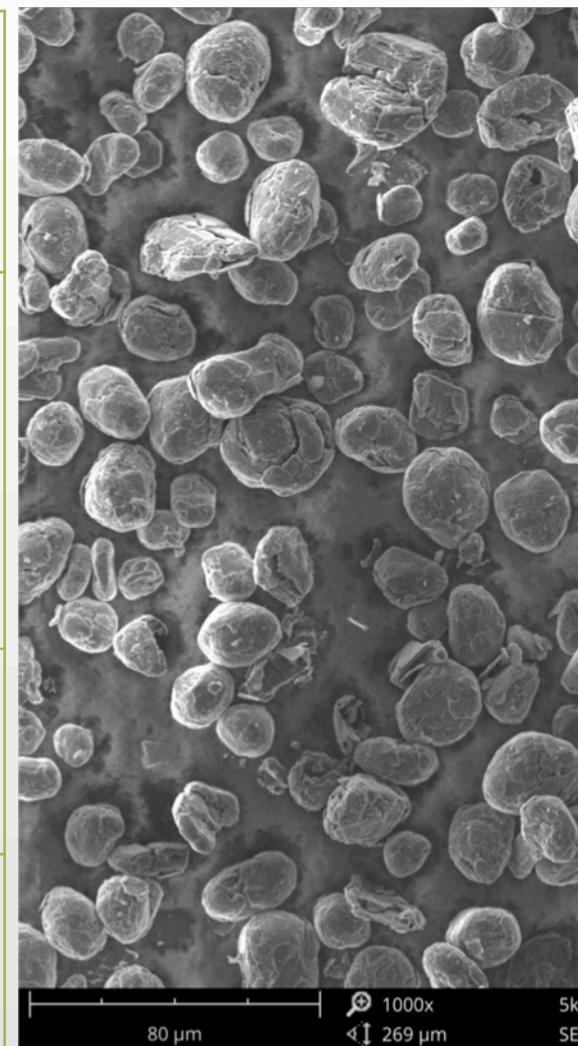
## 4. The Projects – Mahenge Video



# 5. Why Black Rock Mining?



<b>Industry Leading Low Capex and Opex</b>	<ul style="list-style-type: none"> <li>• Pre production capex of around US\$60m for initial production of 50,000 tonnes per annum</li> <li>• Low capex and opex driven by relatively high grades, low strip ratios, simple metallurgy, nearby infrastructure and substantial Resource</li> </ul>
<b>Superior Product Attributes</b>	<ul style="list-style-type: none"> <li>• 99% + concentrates achieved from simple flotation circuit processing lead to higher quality end products with lower purification costs</li> <li>• Higher spheronising yields than current Chinese production</li> <li>• Higher flake density due to thick flake has potential for longer life cells</li> <li>• Thermal processing has returned up to 99.9999% purity – superior to synthetic graphite</li> </ul>
<b>Small Environmental Footprint</b>	<ul style="list-style-type: none"> <li>• Relatively high grade and low strip ratio means less ore is moved</li> <li>• Energy required to process is substantially lower than alternates given ore attributes</li> </ul>
<b>Multi Generational Mine Life</b>	<ul style="list-style-type: none"> <li>• Targeting a mine life of 25 years for PFS at a starting rate of 50,000tpa which is expected to increase during the first 5 years of production. Mineral Resources can support &gt;100 year minelife</li> </ul>



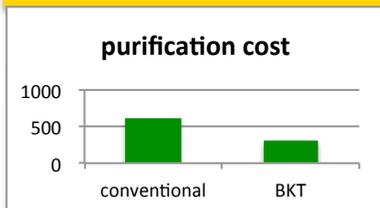
Scanning Electron microscope Image showing Mahenge spherical Graphite

# 5. Why Black Rock Mining?

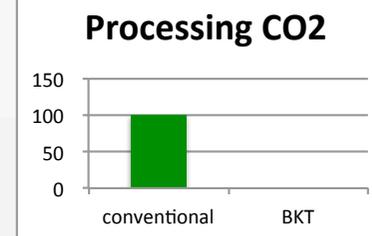


## Green credentials matter for graphite for batteries

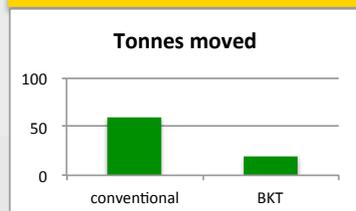
High purity 99% concentrates result in lower purification cost



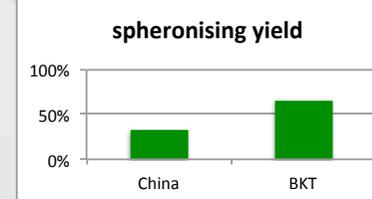
Access to Hydroelectric power provides zero emission processing



High grades, low strip ratio minimise carbon footprint



High spheronising yields result in less processing waste



Low environmental impact through the mining, purification and spheronising process provides a compelling and sustainable competitive advantage

## 6. 2016 – Establishing the Platform



- Delivered a World Class discovery. JORC Resource of 162.5m tonnes at 7.8% TGC with a high grade core of 38.7m tonnes at 9.9% TGC
- Delivered a compelling Scoping Study focussed on Ulanzi completed, showing industry leading low capex driven by grade, strip ratios, nearby power and rail infrastructure and a massive resource.
- Drilling at Cascades completed with JORC Resource estimate on track for release in December 2016
- Bulk sampling and metallurgical testwork is demonstrating sector leading graphite attributes:
  - 98-99.3% concentrates with 50-60% coarse flake – uniform purity through size range
  - Excellent spherical and expandable graphite
  - Thermal purification delivered the World's purest flake graphite up to 99.99994%
- Samples in the hands of graphite end users and processors – generating excellent feedback
- Pre Feasibility Study programme – no surprises and nearing completion with Cascades inclusion
- Commencement of recruitment – building the development and operations team

## 7. 2017 – Execution



- Completion of Pre-feasibility Study focussed initially on Cascades ore given higher grade and likely reduction in pre production capex and operating costs
- Completion of DFS, detailed engineering and construction drawings to enable mine construction
- Completion of Scoping Study for bolt-on spherical graphite and coating plant to demonstrate substantial margin enhancement opportunities flowing from downstream opportunities given the highly advantaged product attributes
- Development of in-Country construction and operational capability.
- Recruitment.
- Continued focus on social licence to operate and demonstration of real commitment to the local communities
- Completion of licence application process
- Continued focus on product testing to ensure that optimal routes to market are established

## 8. Summary



- Black Rock Mining is developing its World Class Mahenge Graphite Project in Tanzania
- The Mahenge Project benefits from relatively high grades, low strip ratios, a large resource and very simple metallurgy, allowing long term low cost operation and downstream margin enhancement options.
- Its competitive advantages can be summarised as:
  - **Industry leading low pre production capex;**
  - **Low opex, high margin;**
  - **Excellent graphite product attributes;**
  - **Small environmental footprint; and**
  - **Multi generational mine**
- 2016 established a positive growth platform by the Company. A World Class resource was announced, a compelling scoping study released and detailed product testing demonstrating excellent characteristics for batteries and high end applications.
- 2017 will see the focus shift from exploration activities to development: building in-Country construction and operational capabilities, commencing detailed engineering and preparing for construction of a low cost graphite mine.

# Further Information



**Mr. Steven Tambanis**  
**Managing Director**

Office: +61 8 9320 7550

[st@blackrockmining.com.au](mailto:st@blackrockmining.com.au)

**Mr. Gabriel Chiappini**  
**Director**

Office: +61 8 9320 7550

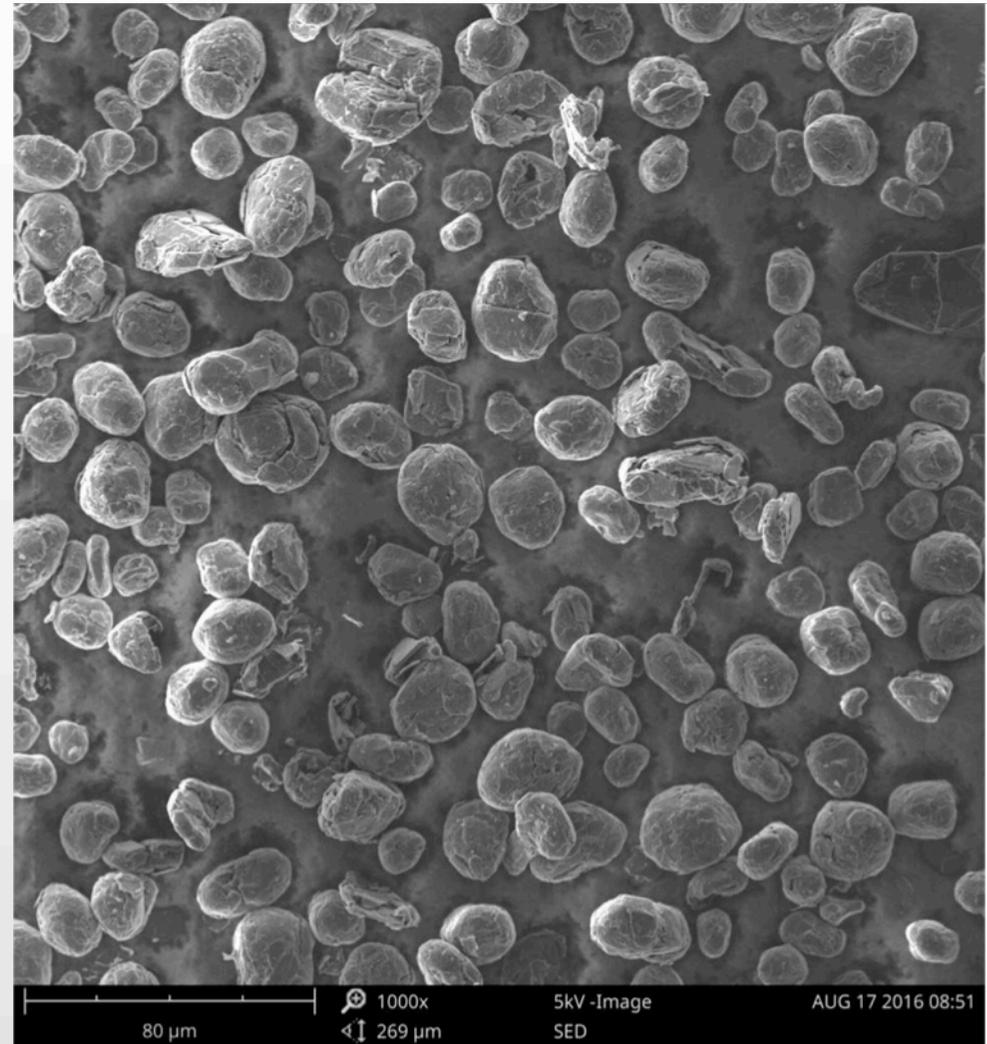
[gabriel@blackrockmining.com.au](mailto:gabriel@blackrockmining.com.au)

# A. Battery Grade Spherical Graphite



Manufactured by independent facilities in Europe, Japan and USA

- 99.98% TGC spherical graphite made from conventional processing and acid purification
- Sector leading >99.999 purities for thermal purification
- High concentrate and spherical densities – Potential for longer cell cycle life
- Expectation of significant reduction in purification cost **and** improvement in spherical product quality.
- Up to 83% spherical yields achieved, compared to 30-40% for conventional rotary mill processing. This is the driver for price premiums

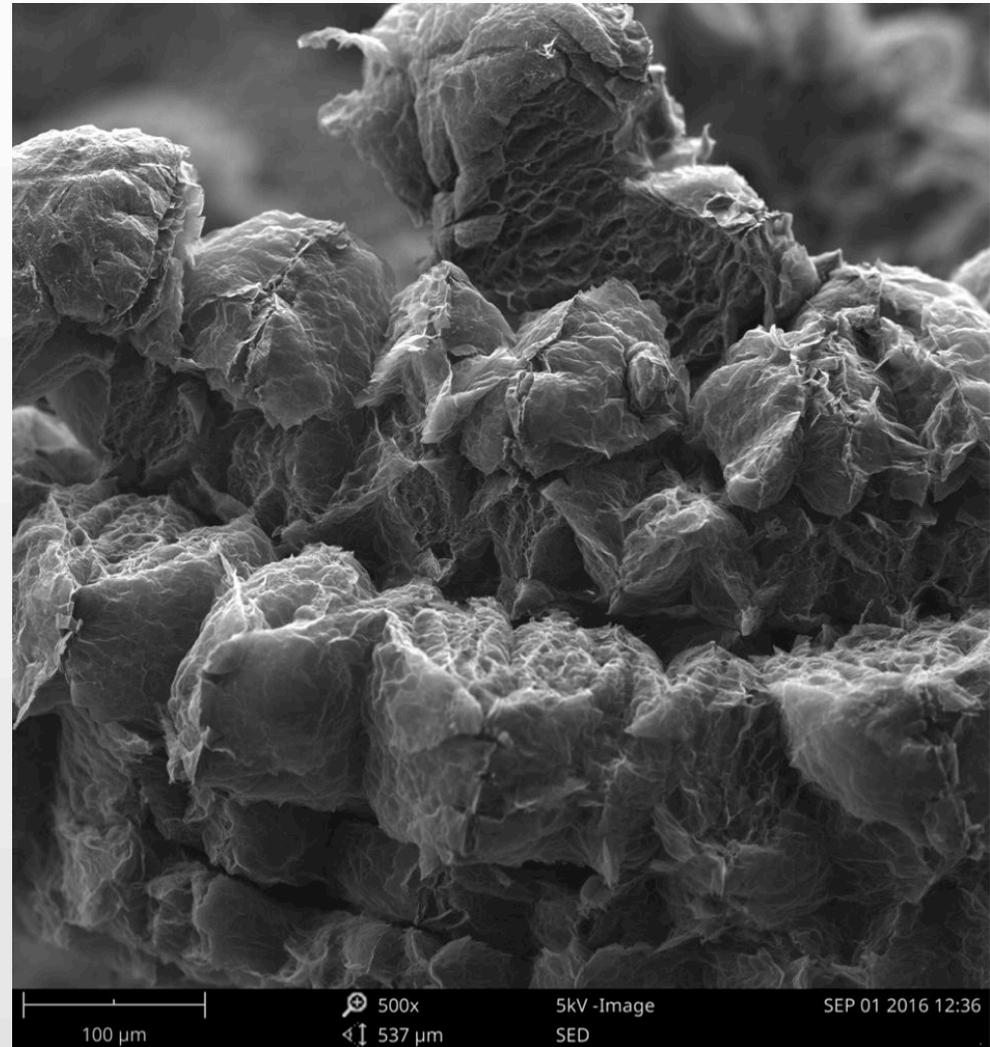


Scanning Electron microscope Images showing Mahenge spherical Graphite

## B. Excellent Expandable Graphite



- Conducted by independent European graphite laboratories and end users
- Mahenge graphite is highly suitable for expandable graphite applications
- Up to 580 times expansion ratio for coarse flake, which is superior to current expandable graphites in marketplace
- Expandable graphite is used for thermal insulation and heat dissipation for electronics, graphite foils for gaskets, insulation and fire proofing



Scanning Electron microscope Image showing expanded graphite "worm" produced from a single Mahenge graphite flake.

# C. Black Rock Graphite Advantages

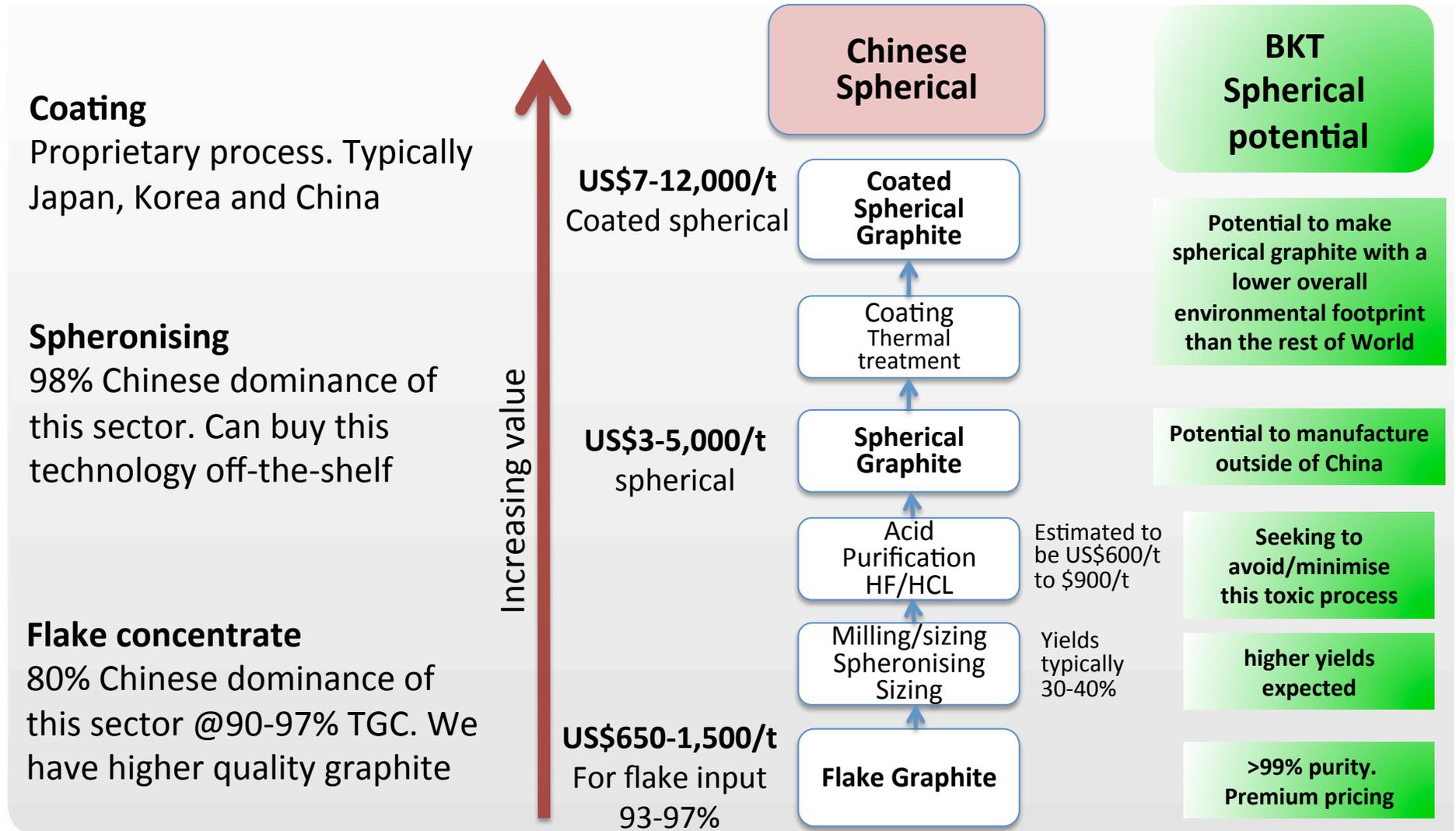


## What is different about our graphite?

- Mineralisation quality – purer precursor flake
- Excellent purities 99% TGC from simple flotation alone across size fractions and across all mineralisation types. This is a premium graphite product. Higher proportion of coarse and jumbo flake compared to Mozambique and low vanadium. Concentrate is high density
- Largest and highest grade JORC resource in Tanzania. **162Mt@ 7.8% TGC\*** with high grade portion of **38.7Mt @9.9%**. Highest grade compared to Tanzania Peer group provides leverage for lower costs of production. **Cascades offers higher grades potential**
- High purity of Mahenge graphite tested to date indicate that it can be applied to the premium battery market. Cost, performance and environmental advantages by minimising acid/thermal processing

- |  |   |
|--|---|
| • Large Resource   | • Straightforward Metallurgy (large flake, >99% purity) |
| • High Grade ore   | • Simple mining with low strip ratio                    |
| • Ability to make premium spherical and expandable graphite.           |   |
| • High spherical yields and confirmed thermal purification superiority |   |
| • Lower environmental footprint at mine and subsequent processing      |   |

# D. Battery flake graphite value chain



**BKT has potential to achieve price premiums for high purity flake concentrates**