

# First spherical graphite tests deliver battery grade specifications



22 September 2016

## Highlights

- Battery grade spherical graphite made from 95.86% TGC Mahenge graphite using conventional milling and purification methods.
- Up to 99.98% TGC purity achieved with excellent Tap Density and BET characteristics
- Comprehensive test work underway in USA and Japan with new high purity 99.2% TGC concentrates.

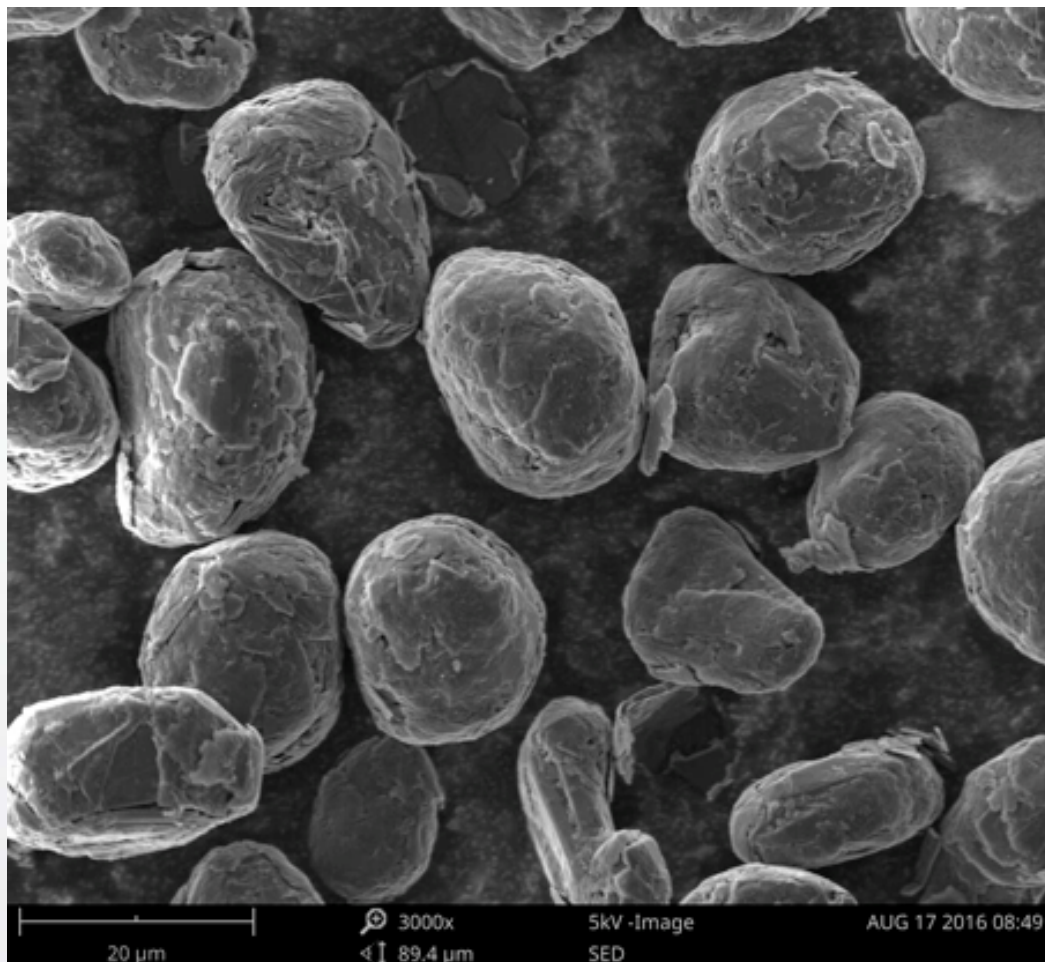


Image 1. Scanning Electron Microscope image showing spheronised Mahenge graphite with characteristic rounded/potato shapes.

**Black Rock Mining Limited (ASX.BKT) ("Black Rock Mining" or "the Company")** is pleased to announce that initial spherical graphite testing has achieved - and exceeded - high quality battery grade spherical graphite specifications.

This test programme was conducted in Europe by an independent test laboratory using the company's early generation 95.86% bulk concentrates that were sent for evaluation in May 2016, prior to the company achieving higher 99% TGC purity concentrates. It is expected that the recent >99% TGC concentrates will make higher specification spherical graphite. Black Rock Mining has distributed the high quality battery grade spherical test samples for evaluation to both independent laboratories and graphite end users.

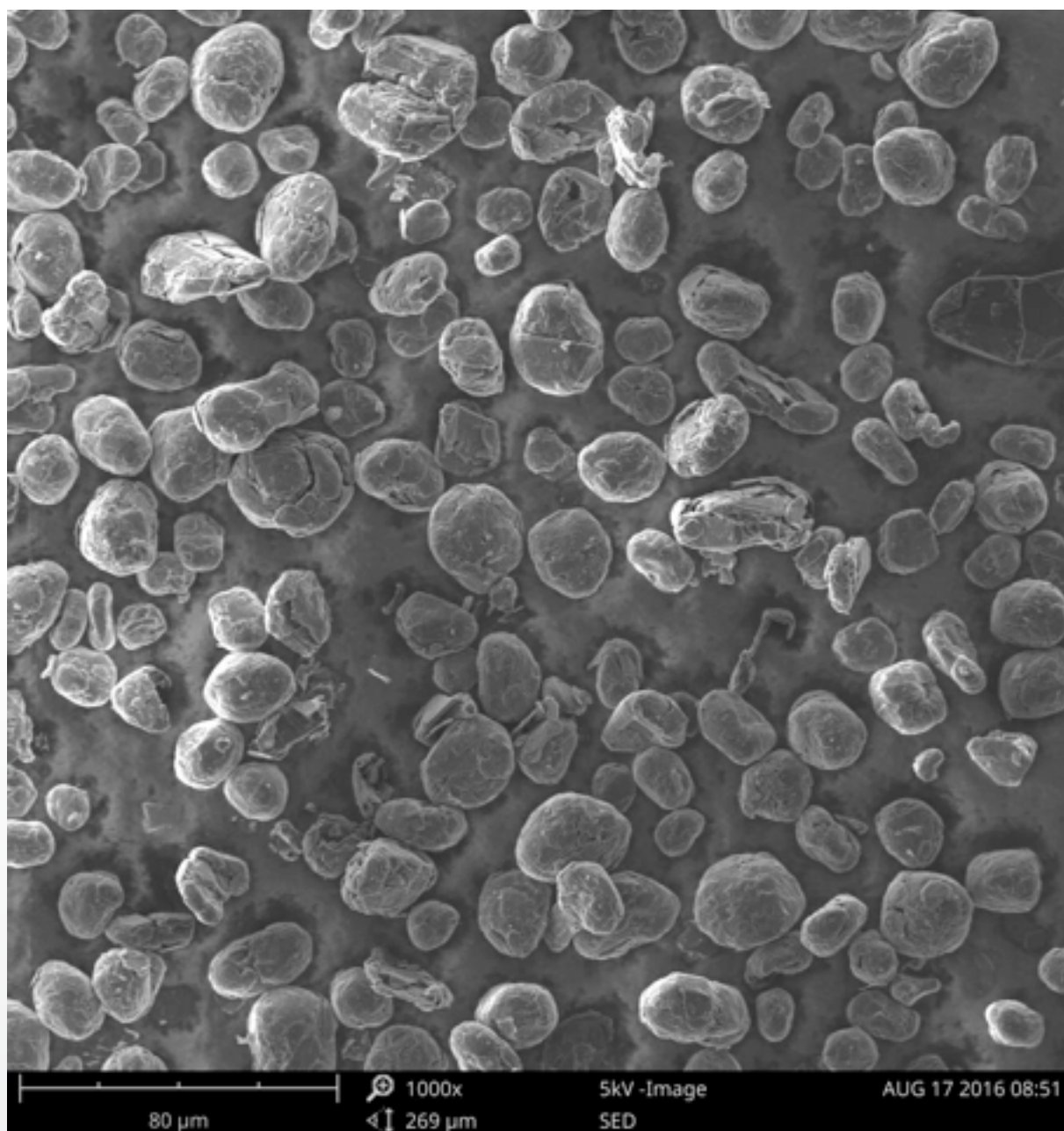


Image 2. Scanning Electron Microscope image showing spheronised Mahenge graphite from test SB3



## Report Findings

The test programme concluded that Mahenge graphite concentrates are suitable for the manufacture of spherical graphite using conventional or industry standard processing and purification steps.

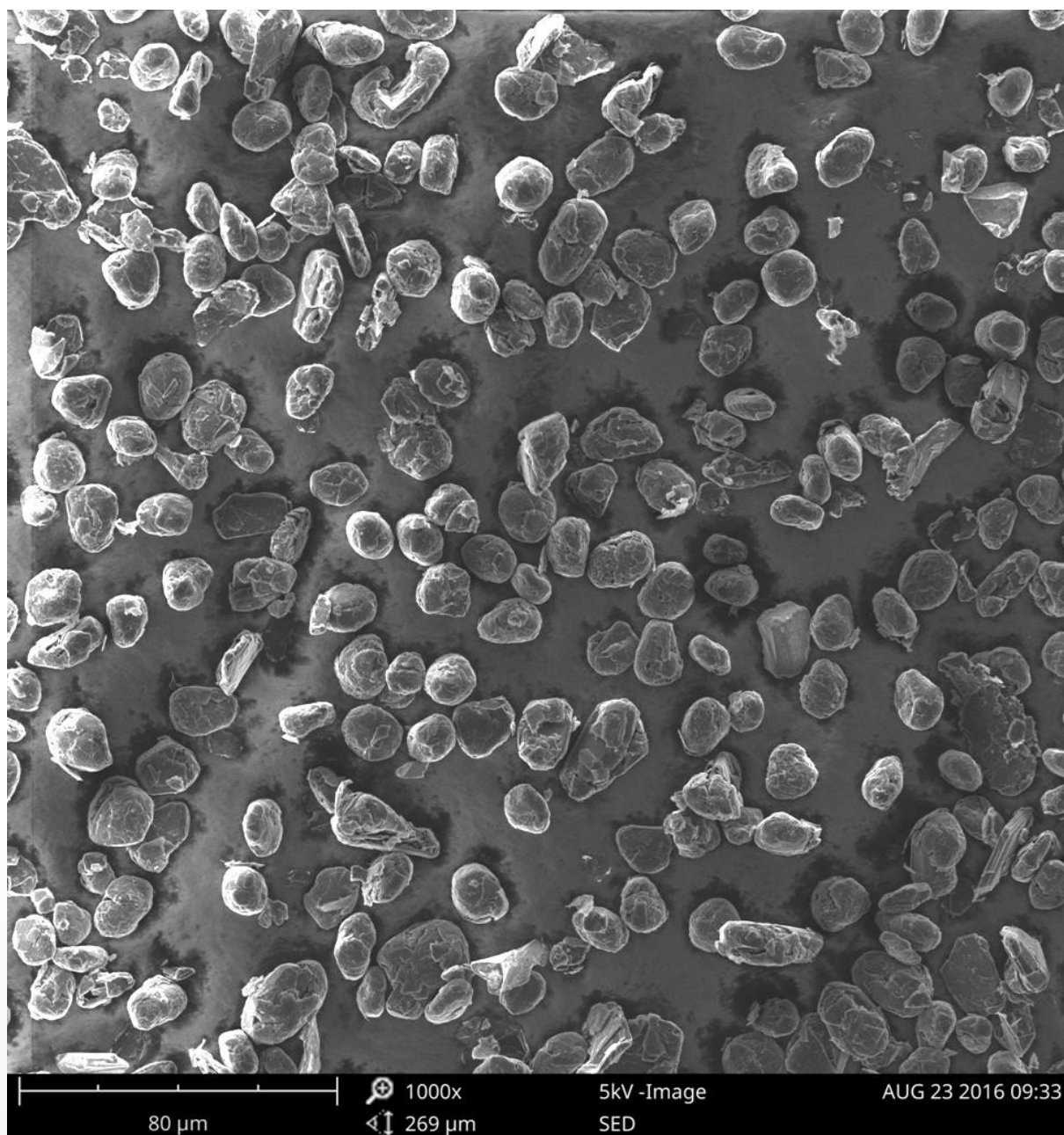
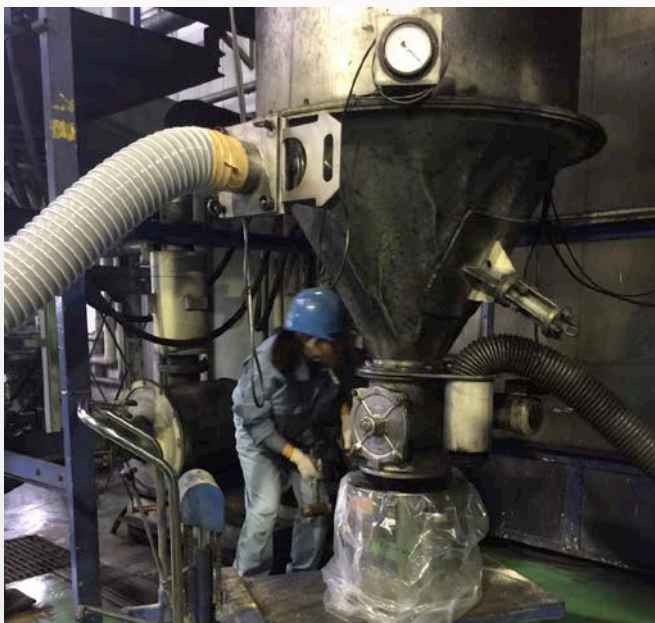


Image 3. Scanning Electron Microscope image showing spheronised Mahenge graphite from test SP S1. This sample has a mean size of 14.1 microns, BET of 6.4m<sup>2</sup>/g and tap density of 0.89 g/cm<sup>3</sup>. Subsequent tests achieved tap densities of 0.97 and 0.96 for 15.5 micron and 19.7 micron product.

The initial test programme paves the way for more detailed testing and refining of the spherical graphite process to suit the characteristics of Mahenge graphite concentrates. Samples of 99.2% TGC concentrates have been prepared and distributed for the next phases of test work where emphasis will be placed to optimise the overall process yield whilst maintaining the high quality battery grade spherical specifications.

## Current test programmes

Samples of 99.2% TGC graphite concentrate have been submitted for spherical test work programmes, which commenced this week in Japan and USA.



Images 4,5,6. Milling and spheronising testing of 99.2% TGC concentrates.





## Expandable graphite images

The expandable graphite report was published by the Company on 04 August 2016, concluding that Mahenge graphite can expand up to 580 times its initial flake volume, which is far in excess of comparable Chinese flake graphite currently on the market. The following two SEM images are of expanded graphite tests conducted in early September, showing significant expansion post intercalation and heating.

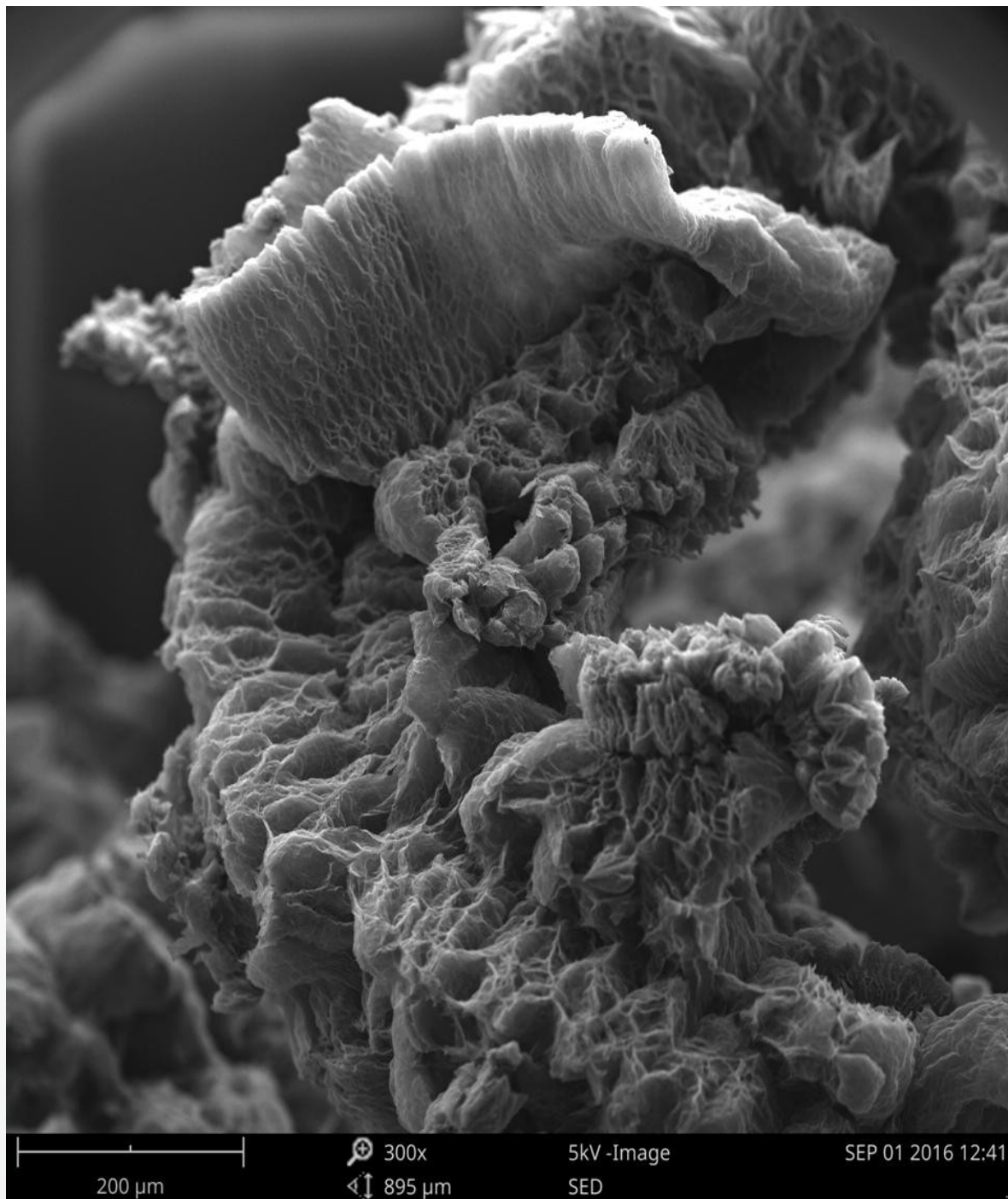


Image 7. SEM image magnified 300x of an expanded flake graphite “worm” made from an individual graphite flake. This has expanded over five hundred times its initial volume due to intercalation and heating.

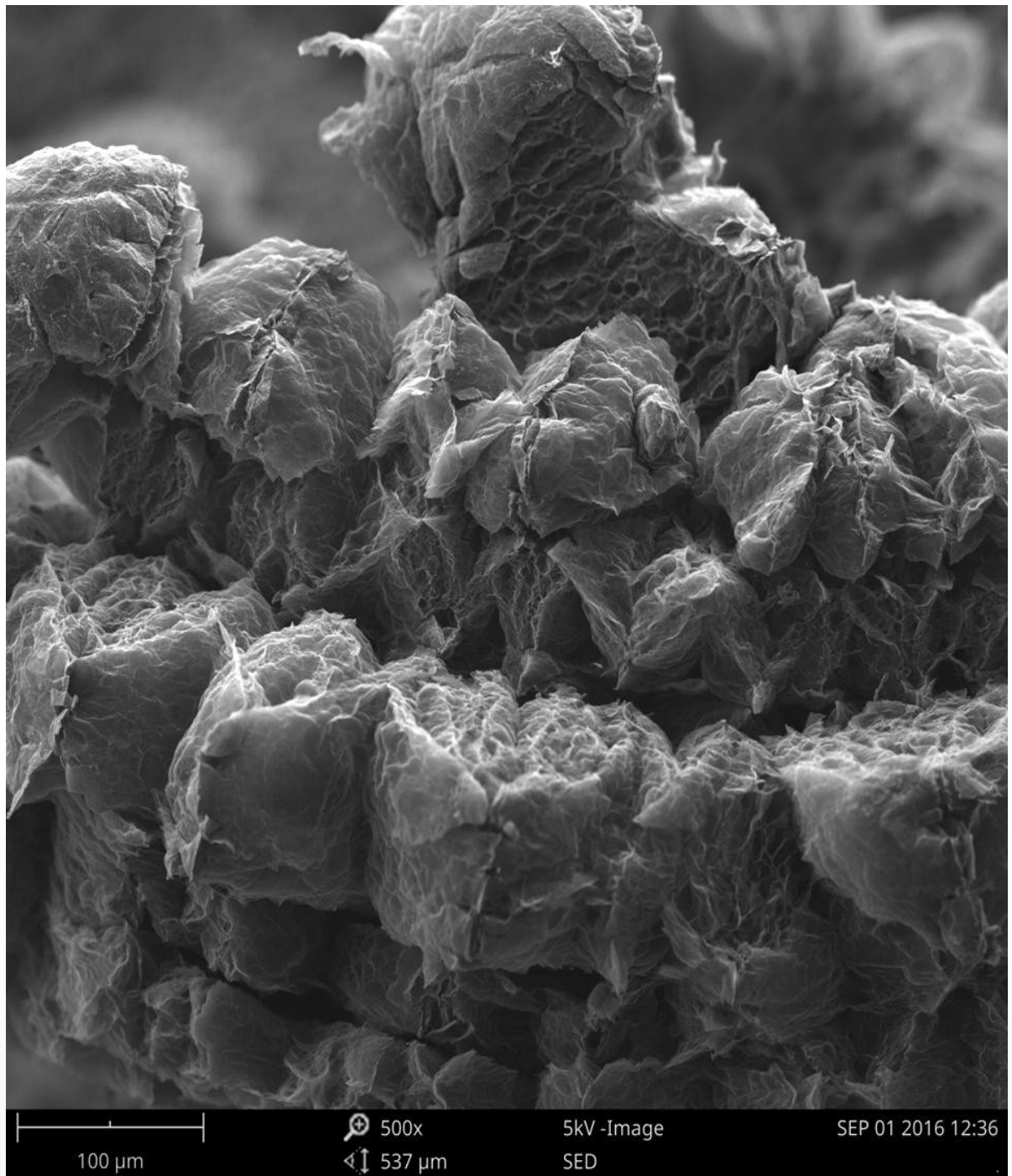


Image 8. SEM image (500x) of expanded flake graphite.

## Summary

Managing Director Steven Tambanis commented: *"Meeting and then exceeding stringent spherical graphite specifications is a significant milestone for the Company; confirmation that Mahenge graphite is a quality material with the characteristics to enter the fast growing battery graphite market. We have comprehensive spherical test programmes underway to determine detailed material properties and optimise a processing flowsheet. This validation process is a critical step to obtaining end user acceptance of Black Rock Mining's Mahenge graphite."*

The Company is expecting to receive the results from the higher purity spherical test programmes in late October.

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## About Black Rock Mining

*Black Rock Mining Limited is an Australian based company listed on the Australian Securities Exchange. The Company owns graphite tenure in the Mahenge region, Tanzania, a Country that hosts world-class graphite mineralisation. The Company announced a maiden JORC compliant resource of 131mt @ 7.9% TGC for 10.4m tonnes of contained Graphite in February 2016, making this one of the largest JORC resources Globally. A positive scoping study in March 2016 led into the current Pre Feasibility Study, which is expected in October/November 2016. The Company intends to complete a Definitive Feasibility study in March 2017.*

*An infill drill programme for Ulanzi was completed in July 2016 to convert the majority of this resource into Measured and Indicated Classification. The updated JORC resource for Ulanzi is expected in September 2016 and a JORC resource for Cascades is expected in late October 2016. The Cascades infill drilling programme has been expanded to incorporate significantly wider mineralised zones, as reported to ASX on 11 August 2016.*

For further information on the company's development pathway, please refer to the corporate video on the company's website at the following link:

<http://www.blackrockmining.com.au/#video>

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## Appendix 1: Test Procedures

The test report covered the characterisation of flake graphite flotation concentrate, micronisation and spheroidization, chemical purification and the expandable graphite evaluation.

- Mineralogical Analyses by X-ray Diffraction
- Chemical Analyses of raw graphite concentrates pre processing, at key process steps and for final products
- Thermal Analyses
- Particle Morphology by SEM (Scanning Electron Microscope) pre, during and post processing
- Particle Size Distribution
- BET surface area
- Bulk and Tap density
- Mineral Processing, including micronisation, spheronisation and chemical purification

In addition, an expandable graphite evaluation was conducted. This was reported to the ASX on 4<sup>th</sup> August 2016 however new SEM images of expanded graphite have now been included.