BLACK ROCK MINING LIMITED

ASX Release **7 June 2017**

Black Rock achieves industry leading yields of 60% in Mahenge graphite concentrate spheronising trials

HIGHLIGHTS

- Black Rock's strategy **of developing a staged low capex mine producing a premium product continues to build momentum,** with successful trials of graphite spheronising
- Trials to produce high-end spherical graphite using Mahenge 99% TGC concentrate **achieved up to 60% yields**, this is significantly higher than the 30-40% yields currently obtained by spherical producers
- Mahenge spherical graphite (SPG) **returned excellent metrics that exceed lithium-ion battery (LiB) manufacturer specifications** – tap density, shape and BET
- **Chemical purification achieved >99.95% purity with minimal acid consumption**, providing potential cost savings due to the high initial concentrate purities
- Together with excellent long-term cell performance results, and the recent Pre-Feasibility Study, this **new processing data builds a compelling argument for Mahenge graphite to deliver the highest quality anode materials and cost savings throughout the processing route to battery anodes**
- The significant purity of 99.95% demonstrates a **strong rationale for a premium price to be received for Mahenge Graphite from eventual end users**.
- Next steps are to distribute bulk quantities of Mahenge concentrates for spheronising testing in commercial plants and provide spherical graphite to end users and provide potential partners with cost and performance data.

Tanzanian graphite developer Black Rock Mining Limited (ASX: BKT) ("Black Rock" or the "Company"), is pleased to announce that ongoing spheronising and purification test programmes completed by Dorfner Anzaplan continue to deliver industry leading results.

Commenting on the results, John de Vries, Executive Director and Interim CEO of Black Rock said:

"We are delighted that our focus on executing a simple and easy to understand model of a straight forward concentrate business continues to move forward. This work validates Mahenge's product, and reinforces the project's compelling investment potential."

"The results from the spheronising and purification testing demonstrates Mahenge graphite can produce spherical graphite, a high value, processed graphite used in the production of lithium ion batteries. This follows the excellent results achieved in the first-pass optimisation study in the Canadian pilot plant that achieved up to 99.6% concentrate purity and recovered coarser flake, proving our previous estimates in the PFS as conservative. Finally, we have had exceptional feedback from end users from the announced 130-cycle battery cell results that confirmed our graphite has the potential to enable battery manufacturers to produce more stable lithium-ion batteries (LIBs), at a lower cost with a longer cycle life."

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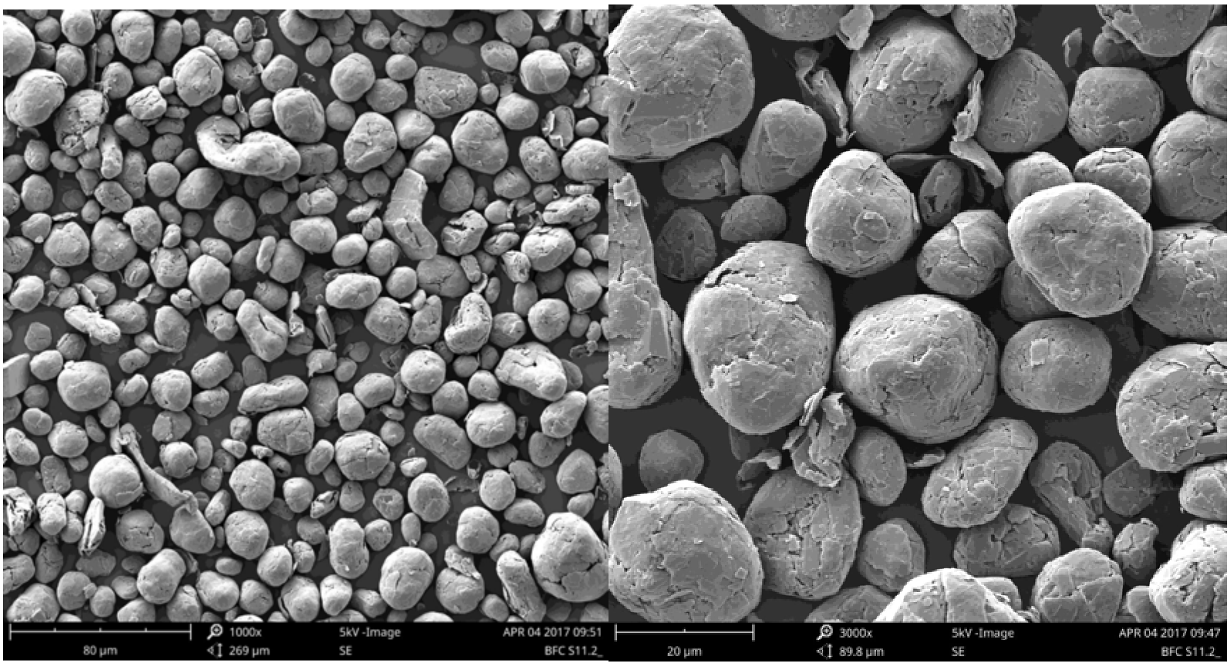
Black Rock has progressively validated all key aspects of its Mahenge Project:

- One of the World's largest graphite resources - straightforward processing into high purity concentrates
- A compelling Pre-Feasibility Study with low capex and high margins compared to Tanzanian peers
- Validation of Mahenge graphite for refractory, expandable and battery use
- Validation that Mahenge graphite can make superior battery anodes with higher yields and performance than peers.

These attributes have led to ongoing discussions with end users and potential partners in key markets for product valuation purposes.



Images 1 and 2. Scanning electron microscope (SEM) images of Mahenge spherical graphite (SPG) at 1,000x and 3,000x magnification. SPG is showing excellent shape.

Introduction

In 2016, Black Rock engaged Dorfner Anzaplan to commence spherical graphite and purification test work initially on its early 96.5% Mahenge Graphite Project graphite concentrates. Results of this programme were highly encouraging however the Company subsequently developed its processing flowsheet to achieve 99% purity concentrates.

These higher purity 99% TGC concentrates were provided to Dorfner Azaplan for spheronising and chemical purification trials to evaluate the following:

1. Characterisation of 99% flake concentrate, full carbon and chemical analysis;
2. Spheronising to optimise yields, shape, BET and tap density
3. Chemical purification to >99.95% battery grade purity to determine cost savings in reagents and time from using a high initial purity flake precursor.

The flake concentrates delivered an optimised 60% spheronising yield – almost double the yield of current spheronising operations. This excellent result indicates significant cost savings that could be achieved by using Mahenge graphite as a feed stock.

Table 1: Tap density, D_{50} values, ratio D_{90}/D_{10}, surface area (BET) and yield of SPG products

	Tap density [g/cm³]	D_{50} [µm]	Ratio D_{90}/D_{10} [-]	BET [m²/g]	Yield Test [wt.-%]
Test products					
BFC S11.2	0.93	16.3	2.7	5.9	60
Typical products					
Ref 10	0.88	12.1	2.6	7.0	
Ref 26	1.01	23.4	2.8	3.8	

Table 1. Showing the 60% yield test together with BET, sizing, sizing ratio and tap density. For comparison purposes, two competitor products on the market are tabled: Ref 10 and Ref 26.

Flake concentrate characterisation

The Mahenge 99% concentrate sample was sized with the following particle size distribution:

Table 2: D values of particle size distribution (Cilas) of sample AZ BFC

Sample ID:		AZ BFC
D_{10}	[µm]	39.5
D_{50}	[µm]	132.0
D_{90}	[µm]	247.8

Table 2. Particle sizing for Mahenge concentrate

This sample is considered to have a coarse particle size distribution with an average D_{50} sizing of 132 microns.

The concentrate was assayed for carbon and remaining non-carbon composition. Silicon and aluminium oxides made up 0.57% with the rest comprising minor metals. Of note, the tap density of the concentrate of 1.05g/cm3 is pleasingly high, attributable to the uniquely thick flake of Mahenge graphite.

Table 3: Chemical analyses of graphite flotation concentrate AZ BFC

Parameter			AZ BFC
Silicon dioxide	SiO_2	[ppm]	3,800
Aluminum oxide	Al_2O_3	[ppm]	1,900
Iron oxide	Fe_2O_3	[ppm]	740
Titanium dioxide	TiO_2	[ppm]	110
Potassium oxide	K_2O	[ppm]	170
Sodium oxide	Na_2O	[ppm]	< 10
Calcium oxide	CaO	[ppm]	< 10
Magnesium oxide	MgO	[ppm]	61
Phosphorous oxide	P_2O_5	[ppm]	67
Barium oxide	BaO	[ppm]	120
Lead oxide	PbO	[ppm]	< 10
Sulfur oxide	SO_3	[wt.-%]	0.03
Zirconium oxide	ZrO_2	[ppm]	35
Manganese oxide	MnO	[ppm]	< 10
Volatile matter		[wt.-%]	0.36
Fixed carbon	C_G	[wt.-%]	98.9
Loss on ignition	LOI	[wt.-%]	99.2
Moisture content		[wt.-%]	< 0.1
BET		[m²/g]	1.0
Bulk density		[kg/dm³]	0.81
Tap density		[kg/dm³]	1.05

Table 3 and Image 3. Chemical analysis of Mahenge 99% concentrate and SEM image at 250x magnification showing the thickness of flake particles as viewed from the crystal edge or c-axis.

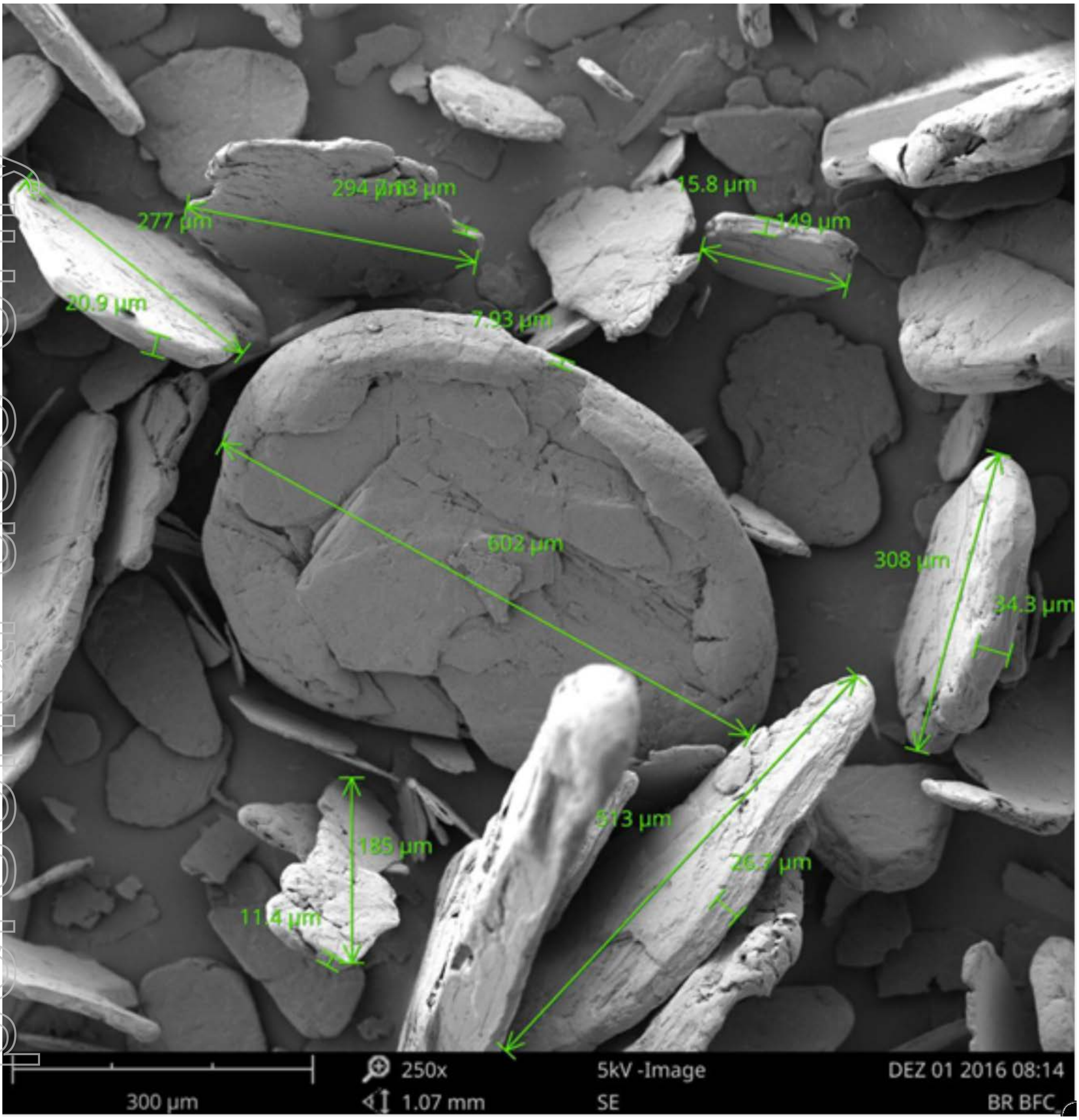
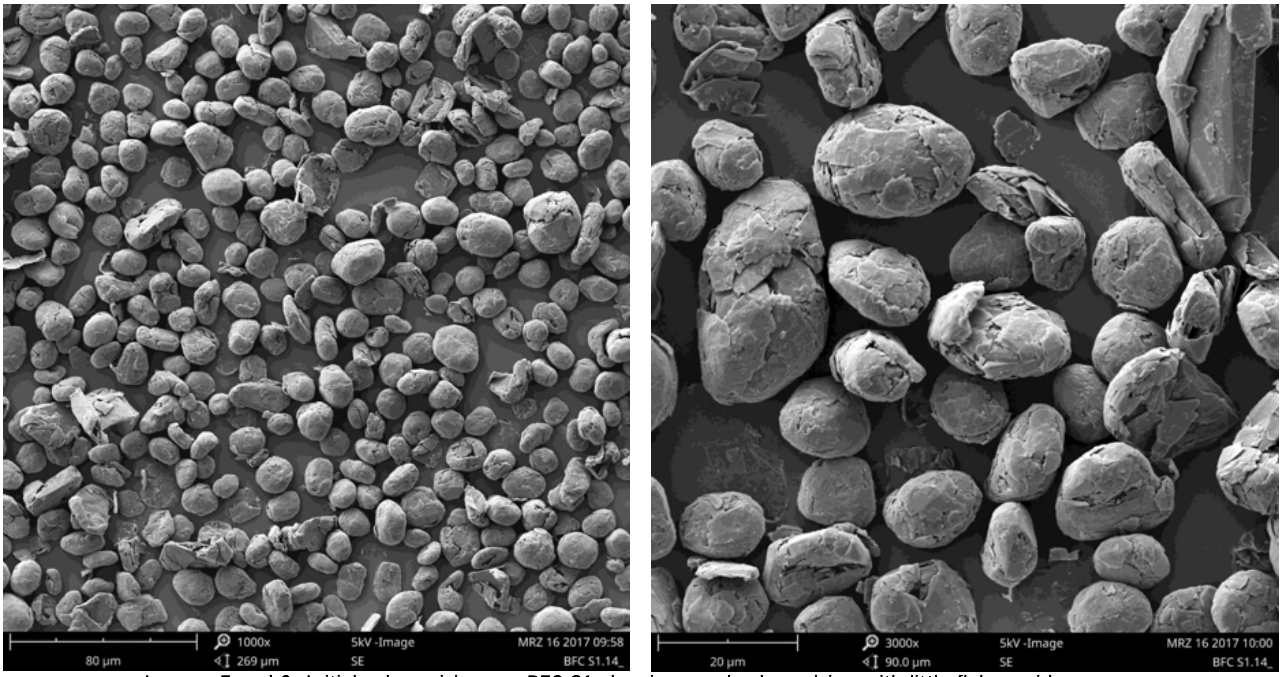


Image 4. SEM image at 250x magnification showing individual measurements of flake crystals with thickness of 11.4 to 34.3 microns. Largest flake particle length is 602 microns

Spheronisation programme

The concentrate was micronised and spheronised under a series of different configurations to determine optimal processing conditions. Initial pre-test BFC S1 was used as a calibration point from the 2016 programme and yielded good spherical product with a tight D90/D10 sizing ratio of 2.3. Sizing ratios typically <3 are desirable for SPG products.

From this point, additional processing cycles were undertaken to optimise micronizing and spheronising steps in order to optimise subsequent shape (sphericity), yield, Tap Density and BET.



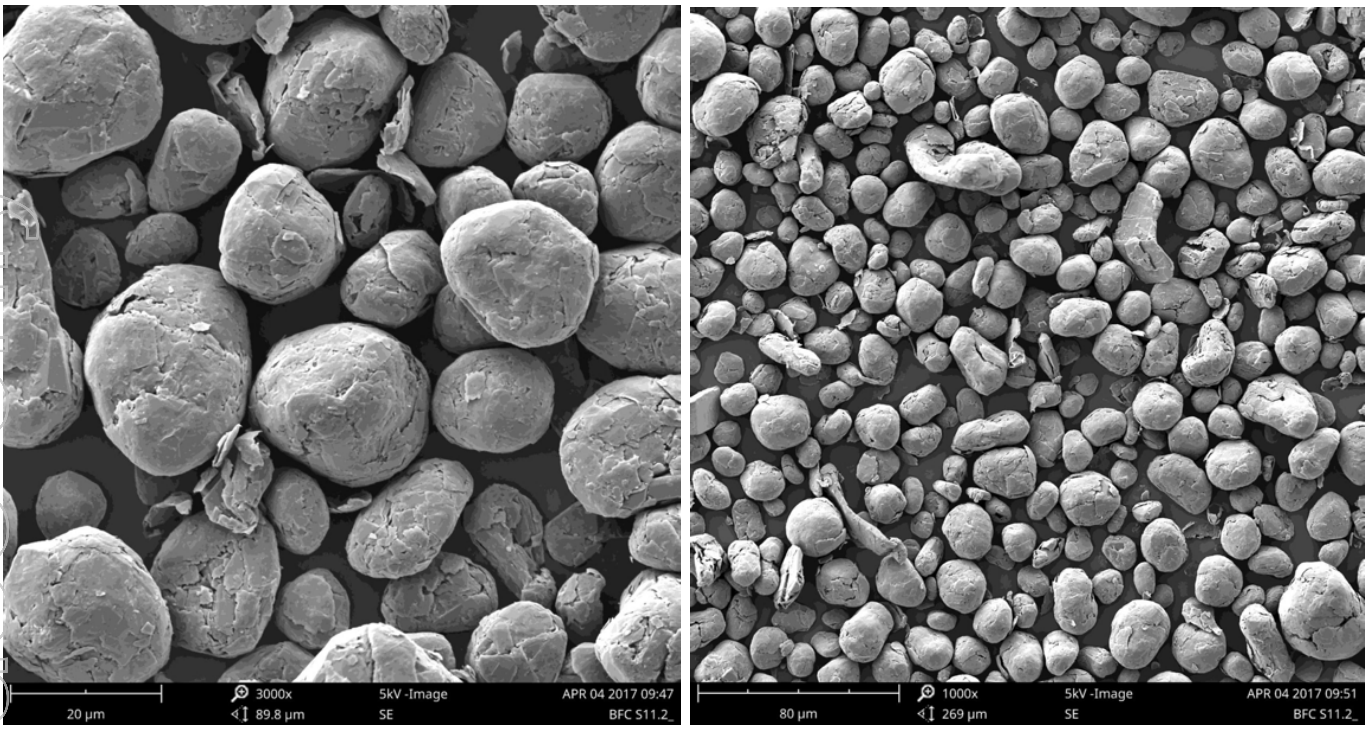
Images 5 and 6. Initial spheronising run BFC S1 showing good spheronising with little flake residue.

Tap density, D50 values, Ratio D_{90}/D_{10} yield test of samples BFC S11, Ref 10 and Ref 26

	Tap density [g/cm³]	**D_{50}** [µm]	**Ratio D_{90}/D_{10}** [-]	**Yield Test** [wt.-%]
Test products				
BFC S11	0.93	16.3	2.7	**60**
BFC S11.2	0.95	18.0	2.9	**55**
Typical products				
Ref 10	0.88	12.1	2.6	
Ref 26	1.01	23.4	2.8	

Table 4. showing the summary table from the test report showing the two optimised spheronising tests with 55% and 60% yields. For comparison, two commercially available SPGs are included.

The final test results show up to 60% yield for BFC S11 with tight particle size distribution of 2.7 and at Tap Density of 0.93. This is an excellent result that provides spherical graphite with parameters meeting or exceeding requirements of battery manufacturers. This material was then chemically purified to battery grade specifications.



Images 7 and 8. Spherical graphite images at 1,000x and 3,000x showing sample BFC S11.2

Purification

The spheronised graphite was chemically purified under different conditions to achieve a minimum 99.95% TGC purity. Twelve single-step acid leaching tests were conducted with chemicals selected to minimise chemical consumption.

Chemical analyses of spherical graphite product BFC SP S1 , flotation concentrate AZ BFC

Parameter			Flotation concentrate **AZ BFC**	Spherical Graphite **BFC SP S1**
Silicon dioxide	SiO_2	[ppm]	3,800	3,642
Aluminum oxide	Al_2O_3	[ppm]	1,900	973
Iron oxide	Fe_2O_3	[ppm]	740	493
Titanium dioxide	TiO_2	[ppm]	110	31
Potassium oxide	K_2O	[ppm]	170	22
Sodium oxide	Na_2O	[ppm]	< 10	43
Calcium oxide	CaO	[ppm]	< 10	< 10
Magnesium oxide	MgO	[ppm]	61	< 10
Phosphorous oxide	P_2O_5	[ppm]	67	53
Barium oxide	BaO	[ppm]	120	28
Lead oxide	PbO	[ppm]	< 10	< 10
Sulfur oxide	SO_3	[wt.-%]	0.03	< 0.01
Zirconium oxide	ZrO_2	[ppm]	35	45
Manganese oxide	MnO	[ppm]	< 10	< 10
Volatile matter		[wt.-%]	0.36	0.53
Fixed carbon	C_G	[wt.-%]	98.9	98.93
Loss on ignition	LOI	[wt.-%]	99.2	99.5

Table 5. Chemical analysis of precursor flake and spheronised sample prepared for purification. Note that the spheronising process naturally upgrades the total carbon content from 99.2% to 99.5%.

Chemical analysis of final spherical graphite concentrates BR BFC C7 and BR BFC C9 after chemical purification

Parameter			BR-BFC-C7	BR-BFC-C9
Silicon dioxide	SiO_2	[ppm]	174	116
Aluminum oxide	Al_2O_3	[ppm]	68	55
Iron oxide	Fe_2O_3	[ppm]	49	40
Titanium dioxide	TiO_2	[ppm]	11	< 10
Potassium oxide	K_2O	[ppm]	< 10	< 10
Sodium oxide	Na_2O	[ppm]	29	19
Calcium oxide	CaO	[ppm]	< 10	< 10
Magnesium oxide	MgO	[ppm]	< 10	< 10
Phosphorous oxide	P_2O_5	[ppm]	24	20
Barium oxide	BaO	[ppm]	< 10	< 10
Lead oxide	PbO	[ppm]	< 10	< 10
Zirconium oxide	ZrO_2	[ppm]	< 10	< 10
Manganese oxide	MnO	[ppm]	< 10	< 10
Sulfur oxide	SO_3	[wt-.%]	< 0.01	< 0.01
Loss on ignition	LOI	[wt-.%]	99.96	99.97
Ash content		[wt-.%]	0.04	0.03

Table 6. Post purification results from chemical purification processing. Test C7 and C9 returned overall purity of 99.96% and 99.97% respectively.

Achieving 99.95% purity was easily achieved with low doses of two different acid compositions in tests C7 and C9. Acid purification of a 99% high purity spherical consumes much less acid than a low purity 95% concentrate. This offers spheronisers using Mahenge graphite cost savings in purification through time and reagent savings.

Summary

The Dorfner Anzaplan test programme has delivered exceptional results from Mahenge 99% TGC graphite concentrate, significantly improving upon the 2016 programme.

Spherical graphite was made with high yields of up to 60%, a significant improvement on the 30-40% yields currently obtained by the industry. An adaptation to the current spheronising process has potential to significantly improve yields yet again and this is planned to be trialled.

Importantly the shape, specific surface area (BET) and tap densities of the SPG exceed battery maker specifications. Chemical purification trials exceeded the 99.95% TGC purity levels demanded by battery producers and demonstrated significant reductions in chemical consumption and processing time. This is attributable to the high initial purity of the precursor Mahenge flake.

In conclusion, the test programme validates a critical portion of the process to place Mahenge graphite into the fast growing battery market. Spherical graphite can be produced, exceeding the strict standards of anode producers and battery manufacturers. Spherical graphite producers can potentially consistently produce a superior product at higher yields and lower purification costs by using Mahenge graphite.

Black Rock has progressively validated all key aspects of its Mahenge Project:

- One of the World's largest graphite resources that simply processes into high purity concentrates
- A compelling Pre Feasibility study with low capex and high margins compared to Tanzanian peers
- Validation of Mahenge graphite suitability for refractory, expandable and battery use
- Validation that Mahenge graphite can make superior battery anodes with higher yields and performance than peers

These attributes have led to ongoing discussions with end users and potential partners with the objective of:

- Supplying consistent high-grade graphite concentrates with consistently superior electrochemical attributes compared to natural and synthetic graphite currently in the market
- Potentially resulting in cheaper cost to construct lithium ion batteries with higher performance and longer lifespan (cycle life)
- Substituting a portion of synthetic graphite in LIBs

Mahenge graphite mineralisation is considered to be consistent in characteristics and distribution across each orebody. This is significant to end users as the Mahenge Project has potential to deliver consistent quality graphite concentrates year-in, year-out for decades.

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About Black Rock Mining

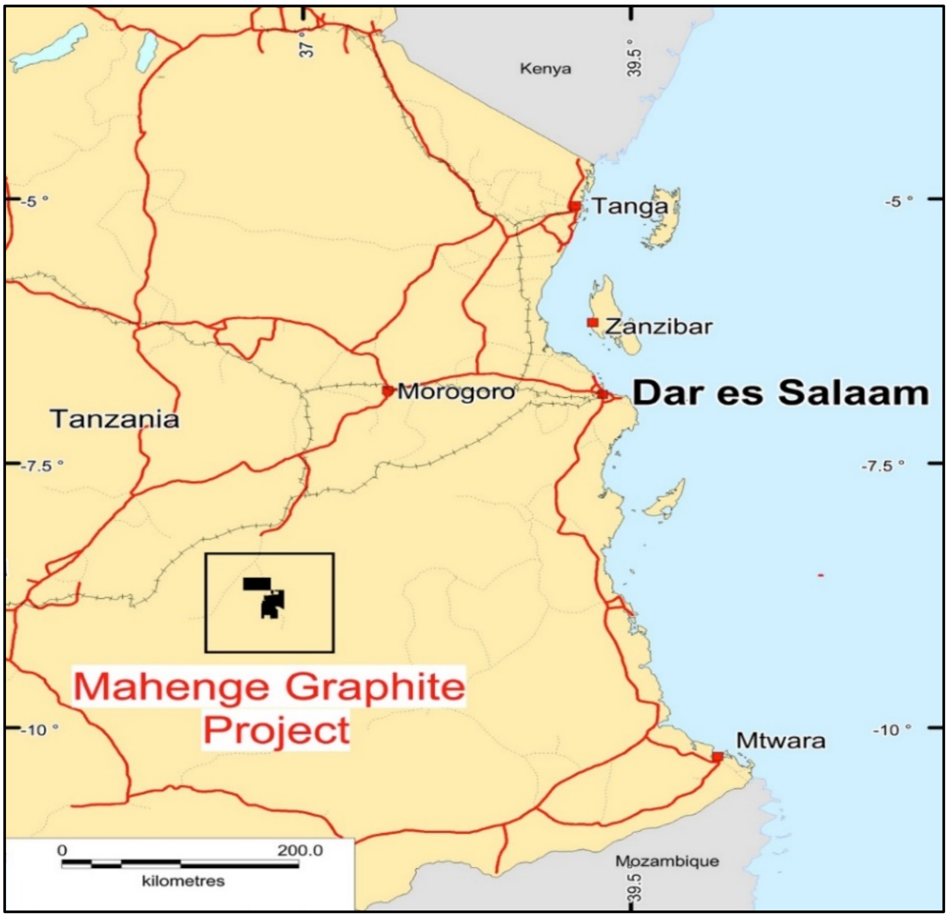
Black Rock Mining Limited is an Australian based company listed on the Australian Securities Exchange. The Company owns graphite tenure in the Mahenge region of Tanzania.

In December 2016, the Company announced a JORC compliant Mineral Resource Estimate of 203m tonnes at 7.8% TGC for 15.9m tonnes of contained Graphite, making this one of the largest JORC compliant flake graphite Mineral Resource Estimates globally. 50% of the Mineral Resource is in the Measured and Indicated categories.

In April 2017, Black Rock announced results of a Preliminary Feasibility Study (PFS) for its Mahenge Graphite Project which confirmed its potential as a long-life, low capex, high margin operation. The PFS estimated a post-tax, unlevered, internal rate of return ("IRR") for the Project of 48.7%; and a net present value (NPV) using a discount rate of 10% (NPV10) of US$624m. Black Rock confirms that the key assumptions used in the PFS have not materially changed and that the material assumptions continue to apply per the PFS announcement released to the ASX on 24 April 2017.

Black Rock is moving towards commencing a Definitive Feasibility Study (DFS). With a successful DFS and associated financing, construction could commence in 2018 with first production in 2019.

For further information on the company's development pathway, please refer to the company's website at the following link: http://www.blackrockmining.com.au and the corporate video presentation at http://www.blackrockmining.com.au/#video.



Map of Tanzania showing Mahenge graphite project Location

Mahenge Global Resource summary reporting table

CATEGORY	TONNES (MILLIONS)	TGC (%)	CONTAINED TGC (MILLIONS TONNES)
Measured	21.2	8.6	1.8
Indicated	81.1	7.8	6.4
Inferred	100.7	7.7	7.7
TOTAL	203.0	7.8	15.9

Resource breakdown by prospect

PROSPECT	CATEGORY	TONNES (MILLIONS)	TGC (%)	CONTAINED TGC (MILLIONS TONNES)
Ulanzi	Measured	13.3	8.9	1.2
	Indicated	48.0	8.2	3.9
	Inferred	50.5	8.0	4.0
	Sub-total	111.8	8.2	9.2
Epanko	Measured			
	Indicated	17.6	6.4	1.1
	Inferred	20.8	5.9	1.2
	Sub-total	38.4	6.1	2.3
Cascades	Measured	7.8	8.0	0.6
	Indicated	15.5	8.4	1.3
	Inferred	29.4	8.4	2.5
	Sub-total	52.8	8.3	4.4
COMBINED	MEASURED	21.2	8.6	1.8
	INDICATED	81.1	7.8	6.4
	INFERRED	100.7	7.7	7.7
	TOTAL	203.0	7.8	15.9

JORC Compliance Statement

Resource

The information in this report that relates to Mineral Resources is based on and fairly represents information compiled by Mr Lauritz Barnes, (Consultant with Trepanier Pty Ltd), Mr Aidan Platel (Consultant with Platel Consulting Pty Ltd) and Mr Steven Tambanis (previous Managing Director of Black Rock Mining Limited). Mr Barnes, Mr Platel and Mr Tambanis 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. Specifically, Mr Tambanis is the Competent Person for the database and geological model, Mr Barnes is the Competent Person for the resource. Both Mr Platel (independent of Black Rock Mining) and Mr Tambanis completed the site inspections.

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. Mr Tambanis holds performance rights in the company as part of his total remuneration package.

The information in this report that relates to the Ore Reserve Statement, has been compiled in accordance with the guidelines of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code – 2012 Edition).

Reserve

The Ore Reserves have been compiled by Oreology Consulting Pty Ltd, under the direction of Mr John de Vries, who is a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy. Mr de Vries is the interim CEO and an Executive Director of Black Rock Mining and holds performance rights in the company as part of his total remuneration package. Mr de Vries has sufficient experience in Ore Reserve estimation relevant to the style of mineralisation and type of deposit under consideration to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves"