

# **Corporate Strategy Presentation**

**Black Rock Mining Limited (ASX: BKT)** 

February 2017

Delivering a compelling low capex, high margin graphite mine

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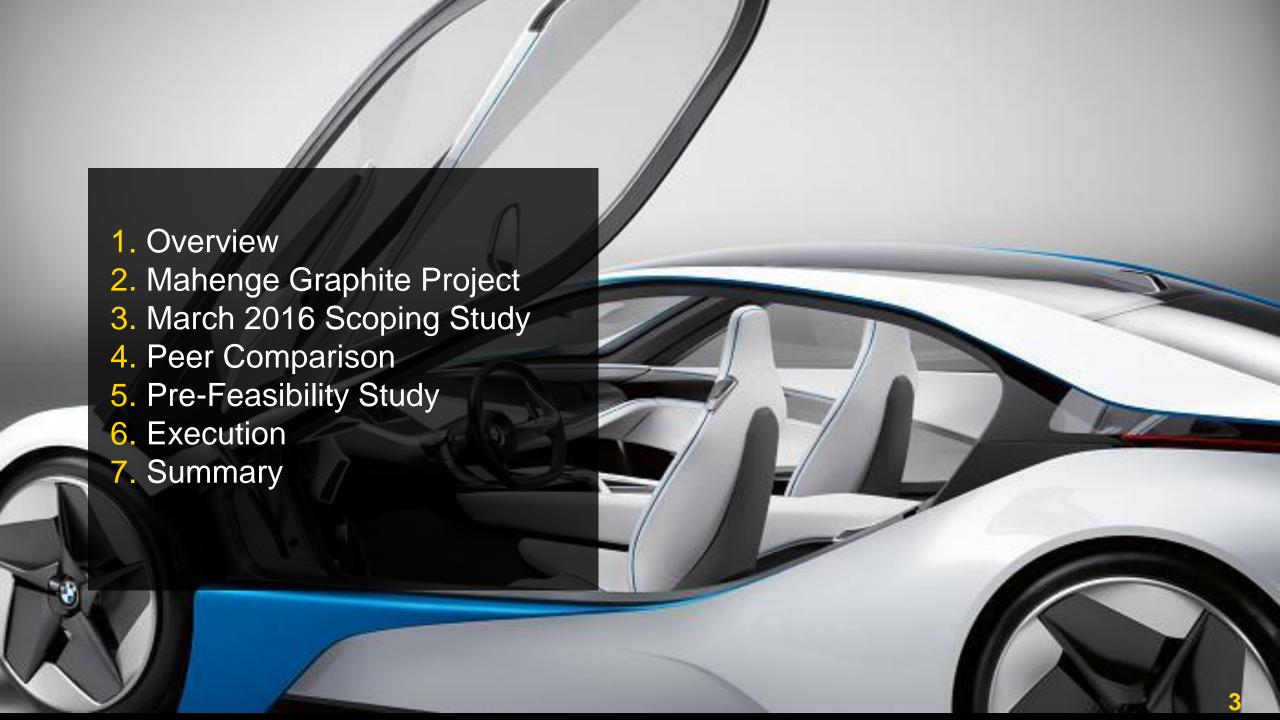
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#### **COMPETENT PERSONS**

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. 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.



## 1. Black Rock Mining Overview



- The Mahenge Graphite Project has a JORC Compliant Mineral Resource Estimate of 203m tonnes at **7.8% Total Graphitic Carbon** ("TGC") with likely mine targets, Ulanzi and Cascades holding **164.6m tonnes** at **8.2% TGC** (13.5m tonnes of contained graphite).
- There is a high grade portion of 44.2m tonnes at 10.6% TGC or 22.5m tonnes at 11.7% TGC.
- Bulk sampling work completed for the Scoping Study produced 77% large flakes or above (>150μm). This delivers an industry leading 6.3% large flakes per tonne of the likely mine target resource.
- Pre production capex at Scoping Study level for a graphite mine delivering an initial 52k tonnes per annum was a low US\$57.3m
   with cash costs to port of US\$458 per tonne.
- Concentrate grades of **over 99%** have been produced via simple flotation circuit, spherical graphite has been produced and battery cell testing is returning excellent results, providing opportunities to target the growing battery market.

## 1. Black Rock Mining Overview (cont'd)



The Company is expecting to release the results of a PFS in March 2017 delivering similar pre production capex and cash costs for an initial 50k to 60k tonnes per annum operation growing over three phases to over 200k tonnes per annum.

The Company's focus is to ensure that it has:

- Industry leading low pre production capex
- Optimum scale to drive cash costs whilst ramping up to meet expected demand growth
- Completed all relevant test works to demonstrate its high quality product to ensure ongoing discussions with potential partners deliver results, and
- The right team to design, construct and operate a graphite mine and spheronising plant

### 2. Mahenge Graphite Project



### High grade resource capable of delivering a multi generational mine with significant scale

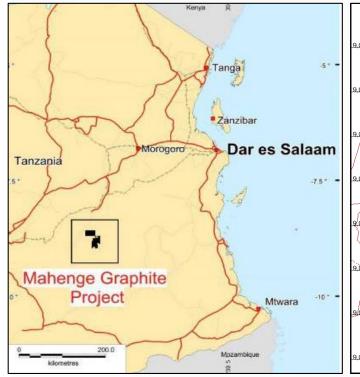
Cascades and Ulanzi JORC Mineral Resource estimate of **164.6m tonnes at 8.2% TGC** 

Large, high grade Tanzanian Project with the fourth largest JORC Resource in the world, supported by close proximity to infrastructure.

Ulanzi has a JORC Compliant Resource of 111.8m tonnes at 8.2% TGC including a higher grade sub set of 29.3m tonnes at 9.9% TGC\*

Cascade has a JORC Compliant Resource of **52.8m tonnes at 8.3%** TGC including a higher grade sub set of **14m tonnes at 12.1%** TGC\*\*

Over 50% of Resource tonnes in the Measured and Indicated categories



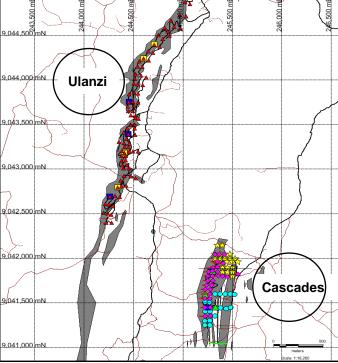


Image showing project location in Tanzania

Image showing Ulanzi and Cascades localities. Grid spacing is 500m.

<sup>\*</sup> ASX Release of 6 October 2016

<sup>\*\*</sup> ASX Release of 12 December 2016

## 3. March 2016 Scoping Study



#### Industry leading pre production capex, absolute flake size and concentrate grade

Pre production capex of US\$57.3m\*

Annual production of **52k tonnes** of graphite concentrate for an initial **25 year mine life** 

Assumed feed grade of 10.5% TGC

Strip ratio of 1.23:1

Cash costs of production of US\$458 per tonne

Subsquent bulk sample optimisation delivered a **99.1%** concentrate grade for over 88% of flake sizes (>75  $\mu$ m) from conventional flotation circuit processing\*\*

Subsequent spherical graphite test works delivered battery grade purity with excellent tap density\*\*\*

Screen Size	Mass	Total	Mine Target %
> 300 µm	17.4%	17.4%	1.4%
> 180 µm	34.8%	52.2%	4.3%
> 150 µm	10.4%	62.7%	5.2%

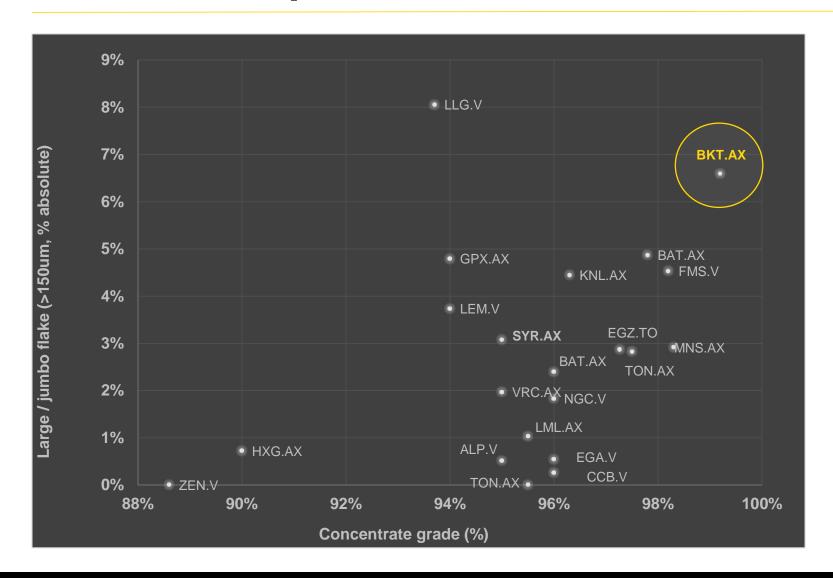
<sup>\*</sup> ASX Release of 22 March 2016

<sup>\*\*</sup> ASX Release of 16 August 2016

<sup>\*\*\*</sup> ASX Release of 22 September 2016

### 4. Peer Comparison





Absolute percentage of large flake size vs concentrate grade based on head grade for mine plan and relevant recoveries as presented in most recent mining study and or market release.

## 5. Pre-Feasibility Study



#### Three phase mine design with low pre production capex and substantial long term production

Three phase mine design with initial phase target of 50k to 60k tonnes per annum ramping to over 200k tonnes per annum\*

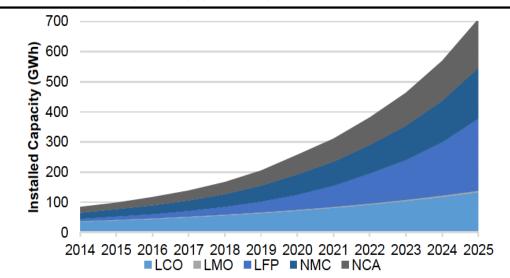
Ramp up expected to take advantage of growing global demand for batteries whilst ensuring that pre production capex remains at industry leading low levels

Mine design to focus on high grade sub set of Cascades Resource of 14m tonnes at 12.1% TGC

PFS expected to benefit from ongoing test work demonstrating graphite suitability for the battery market and other high end applications

#### Due for release in March 2017

Figure 38: Installed Battery Capacity by Cathode type



Source: Company Reports, Canaccord Genuity estimates

<sup>\*</sup> ASX Release of 22 December 2016

### 6. Execution – Team



### Building a very capable team of professionals to design, construct and operate the graphite mine

Senior management team to consist of seven professionals

Three of seven positions filled with ongoing discussions to fill other roles with the right mix of experience and passion

Majority of positions to be filled in the current Quarter

Preparing for rapid movement from PFS into detailed engineering phase and mine construction planning

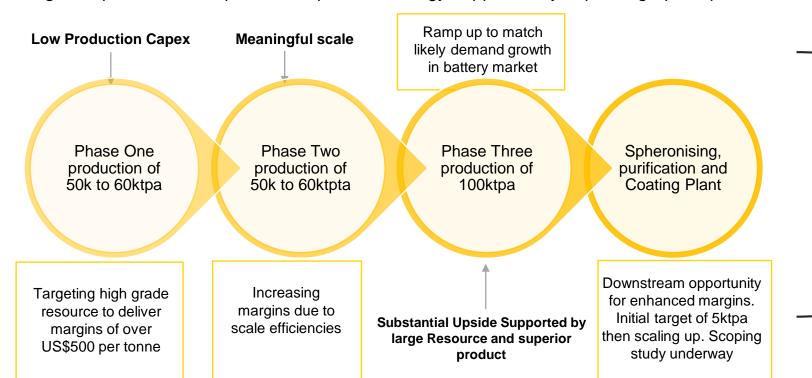


### 6. Execution – Low Capex Focus



### Low capex is king

- Disciplined focus on realistic low pre production capex to ensure financing is achievable and ramp up profile properly matches likely increases in market demand
- Meaningful scale supported by large multi-generational Resource
- Long term product development and partner strategy supported by superior graphite product



Annual EBITDA target of over

**US\$150m** 

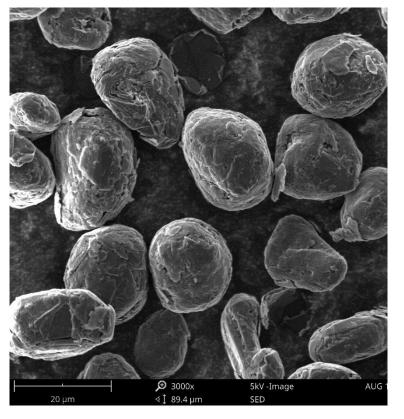
### 6. Execution – Product Development



### Ongoing work to reinforce superior product qualities for the right partners

Test work being conducted in Europe, USA and Asia to demonstrate the superior qualities of Mahenge graphite

- High purity concentrates up to 99% TGC are expected to sell at a premium to lower grade competitor material
- Mahenge graphite is high density due to thick flakes
- Spherical test work indicates that Mahenge concentrates can deliver higher spheronising yields due to thick flake characterisitics
- Acid purification methods have delivered battery grade 99.95% purity
- Thermal purification methods have achieved up to an exceptionally high 99.9999% purity
- Battery cell testing continues to return excellent electrochemical results
- Long term battery cycling tests indicate that Mahenge graphite is extremenly stable and as a result should deliver longer lifespan batteries
- Scoping Study underway for spherical graphite, purification and coating



SEM image of Mahenge spherical graphite

## 7. Summary



- The Mahenge Graphite Project has a JORC Compliant Mineral Resource Estimate of 203m tonnes at 7.8% TGC (15.9m tonnes of contained graphite), with likely mine targets, Ulanzi and Cascades holding 164.6m tonnes at 8.2% TGC (13.5m tonnes of contained graphite).
- There is a higher grade portion of 44.2m tonnes at 10.6% TGC of which Cascades contains 14m tonnes at 12.1% TGC.
- Pre production capex at Scoping Study level for a graphite mine delivering an initial 52k tonnes per annum was only US\$57.3m with cash costs to port of US\$458 per tonne.
- Concentrate grades of over 99% have been produced via simple flotation circuit, spherical graphite has been produced and battery cell testing is returning excellent results, providing opportunities to target the growing battery market.
- The Company is expecting to release the results of a PFS this Quarter delivering similar pre production capex and cash costs for an initial 50k to 60k tonnes per annum operation growing over three phases to over 200k tonnes per annum.

The Company's focus remains ensuring it has:

- industry leading low pre production capex,
- optimum scale to drive cash costs whilst ramping up to meet expected demand growth,
- completed all relevant test work to demonstrate its high quality product to ensure ongoing discussions with potential partners deliver results, and
- the right team to design, construct and operate a graphite mine and spheronising plant

### **Further Information**





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# Appendix – Mahenge JORC Mineral Resource Estimate



		Tonnes	TGC	Contained TGC
Prospect	Category	(Millions)	(%)	(Millions tonnes)
Ulanzi	Measured	13.3	8.9	1.2
	Indicated	48.0	8.2	3.9
	Inferred	<u>50.5</u>	<u>8.0</u>	<u>4.0</u>
	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	<u>29.4</u>	<u>8.4</u>	<u>2.5</u>
	Sub-total	52.8	8.3	4.4
COMBINED	MEASURED	21.2	8.6	1.8
	INDICATED	81.1	7.8	6.4
	INFERRED	<u>100.7</u>	<u>7.7</u>	<u>7.7</u>
	TOTAL	203.0	7.8	15.9

			Contained TGC
	Tonnes	TGC	
			(Millions
Category	(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

ASX Release - 12 December 2016