



# **BLACK ROCK**

**MINING LIMITED**

## **CORPORATE UPDATE SEPTEMBER** *DISCIPLINED EXECUTION AND FOCUS* **2017**



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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 John de Vries, who is a member of the AusIMM. He is an employee of Black Rock. John de Vries 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 de Vries consent to the inclusion in this report of the matters based on their information in the form and context in which they appear.

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 a full-time employee 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".

# Focused on developing Mahenge



## Mahenge Graphite Project - truly a world-class deposit

- Lowest quartile FOB costs of US\$378/tonne steady state
- Upper quartile margins of US\$863/tonne *based on credible price deck*
- Best in class peak capex at US\$90m against 250k tonnes per annum of steady state production
- Scalable and option rich



## Successfully delivered optimised PFS with disciplined “crawl walk run” strategy

- Increased NPV<sub>10</sub> to US\$905m after tax, inclusive of 16% free carried interest, inspection fee and royalty increases
- Ore Reserves increased to 69.6 million tonnes at 8.5% TGC
- Production rate increased to a maximum of 250k tonnes per annum
- Steady state EBITDA increased to over US\$220m per annum<sup>1</sup>



## Simple concentrate only business model

- Investable & fundable
- Avoids over stressing balance sheet
- Avoids corporate distraction
- Simplifies marketing and avoids competing with customers

<sup>1</sup> Assumes no 16% free carry from Government

# Mahenge Graphite Project

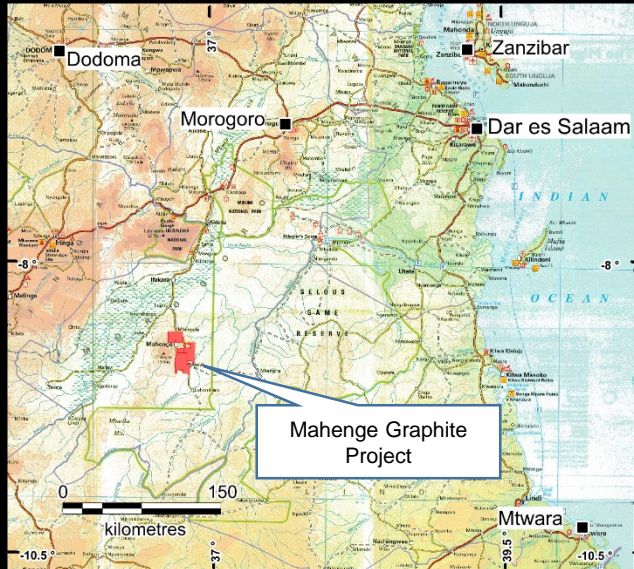


Image showing project location in Tanzania

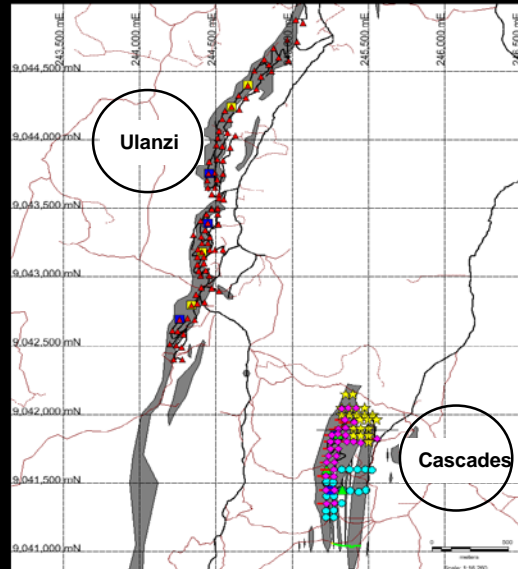


Image showing Ulanzi and Cascades localities. Grid spacing is 500m.

**HIGH-GRADE  
 RESOURCE CAPABLE  
 OF DELIVERING A  
 MULTI-GENERATIONAL  
 MINE WITH  
 SIGNIFICANT SCALE**

Feed profile is derisked with 69.6 million tonnes ore reserve delivering 80% of plant feed\*

Three staged bootstrap development model gives magnitude without overreach

Good infrastructure with 220 kv power, and rail 60 km away at Ifkara, and new bridge over Mynera River

Total Resource contains over 16 million tonnes of graphite

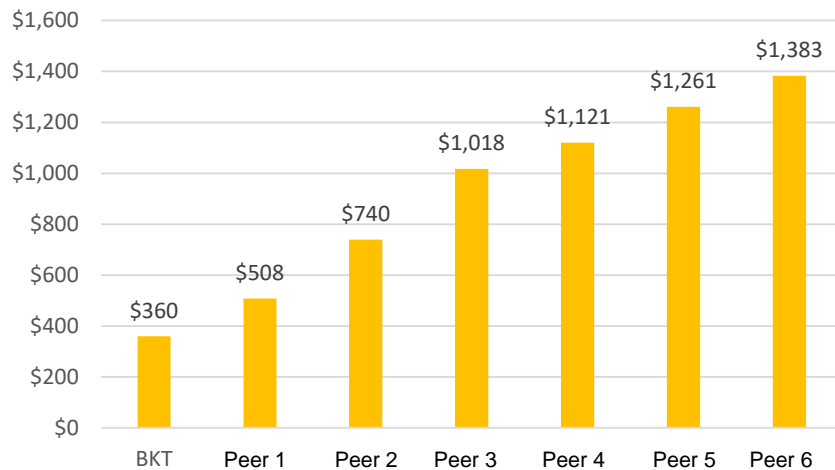
\* ASX Release of 20 July 2017

# Mahenge Graphite Project Optimised PFS

## KEY PFS INVESTMENT METRICS

- NPV<sub>10</sub> of US\$905m
- IRR of 45.1%
- EBITDA in first full year of production of US\$220m (EBITDA margin of 66%)

PEAK CAPITAL INTENSITY VS FINAL RUN RATE



SENSITIVITY ANALYST ON BASKET PRICE ASSUMPTION

Basket Price Assumption (US\$ per tonne)	NO FREE CARRY		16% FREE CARRY INSPECTION FEE	
	NPV <sub>10</sub> nominal US\$ m	IRR %	NPV <sub>10</sub> nominal US\$ m	IRR %
+400	1,735	69.1	1,421	62.8
+200	1,425	59.7	1,163	54.0
BASE	1,114	49.4	905	45.1
-200	804	40.1	648	36.0
-400	494	29.5	390	26.6

# August 2017 Optimised Pre-Feasibility Study

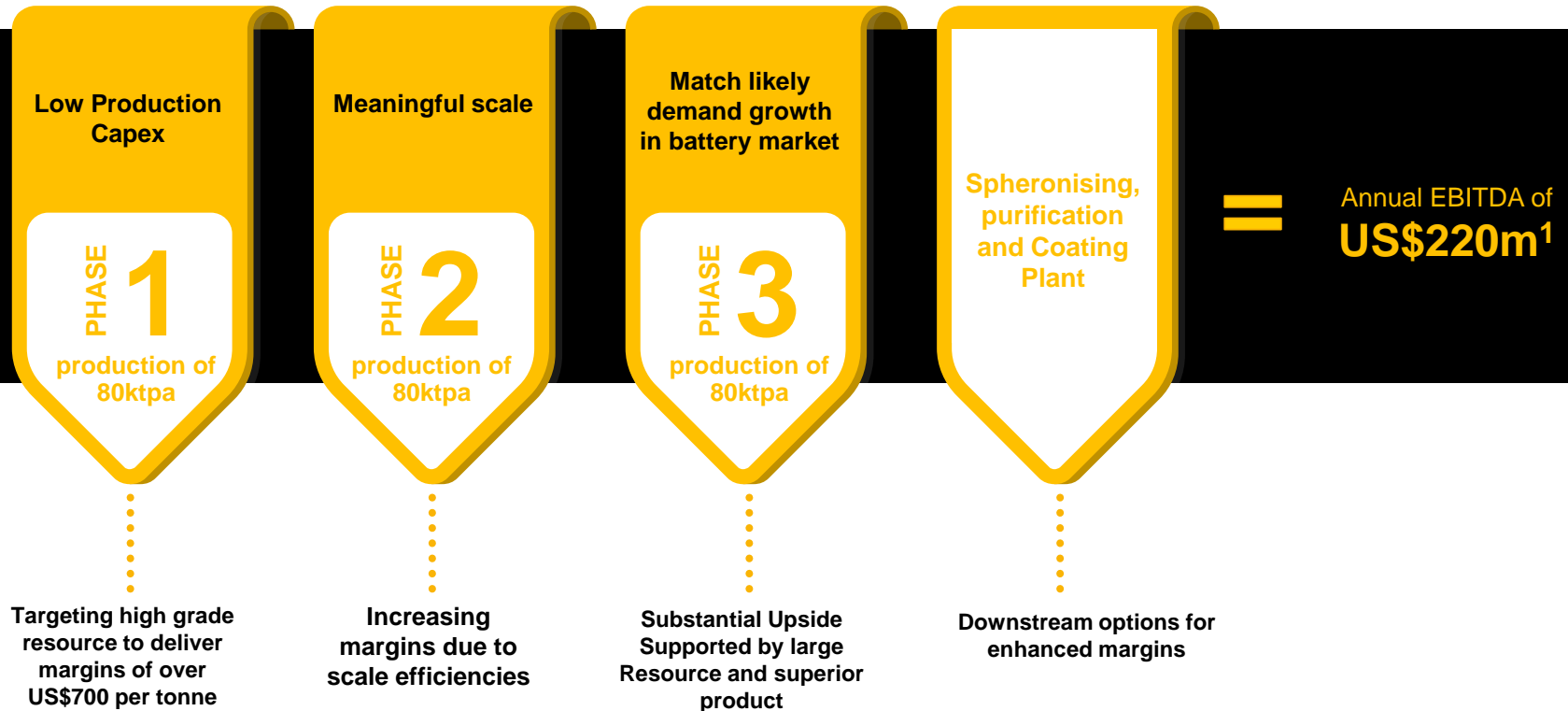
- Three stage construction to deliver a maximum of **250k tonnes per annum of 98.5% graphite concentrate for 31 years**. Stages two and three to be funded from free cash flow
- Pre-production capex of **US\$90.1m\***
- Steady state opex reduced to **US\$378 per tonne**
- Realistic basket price assumption of **US\$1,241 per tonne delivering an operating margin of US\$863 per tonne**
- Assumed feed grade of **8.5% TGC**
- Life of mine strip ratio of **0.8:1 (early years are 0.5:1)**
- Post-tax unlevered project **NPV<sub>10</sub> of US\$905m**
- Post-tax, unlevered **IRR of 45.1%**
- EBITDA in first full year of production **US\$220 million (EBITDA margin of 66%)**

KEY FINANCIAL PARAMETERS	Unit	Single Module	Two Module	Three Module	LOM
Commencement	(Year)	1 & 2	3+	5	
Capital Cost	(US\$ M, real)	90.7	72.2	81.7	243.7
IRR - after tax	(%, nominal)	35.3%	43.8%	45.6%	45.6%
NPV @ 10% - after tax 16% free carried, 1% inspection fee	(US\$ M,	202	506	905	905
Total Concentrate Sales	('000 t)	3,265	5,142	6,738	6,738
Cash Costs (FOB)	(US\$/t, real)	513	382	378	378

**INDUSTRY LEADING PRE-PRODUCTION CAPEX, MARGIN, CONCENTRATE GRADE  
WITH A MULTI-GENERATIONAL MINE LIFE**

\* ASX Release of 8 August 2017

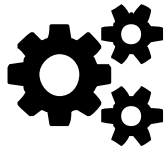
# August 2017 Optimised Pre-Feasibility Study



- 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

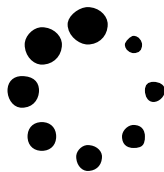
<sup>1</sup> Assumes no 16% free carry from Government

# August 2017 Optimised Pre-Feasibility Study



## ENGINEERING STUDIES

- Modular approach results in higher level of final engineering before execution decision is made
- Modular approach minimises in-field risk via completion testing and fixed price deliver at factory gate
- Assembly vs construction minimises in-field complexity



## ORGANISATION DEVELOPMENT

- Develop systems and processes to support business in-country
- Invest in skills as part of DFS to facilitate smooth start-up and running of module 1
- Boot strap approach results in orderly scale up of workforce as successive modules are added to the business



## MARKET DEVELOPMENT

- Pilot plant and bulk sample early gives customers concentrate at least two years before commercial operation
- Extended battery test program gives consumers a “cookbook” to start with
- Funded and resourced component of study



# Marketing Development

## MOU'S SIGNED WITH REAL INDUSTRY PARTICIPANTS



**MEIWA CORPORATION**

### MEIWA

- Part of Mitsubishi group of companies
- Existing major player in battery space



### BOTIAN

- Existing spherioniser in Chinese market
- Creates capacity to deliver final product without investing capital, organisational development and management bandwidth

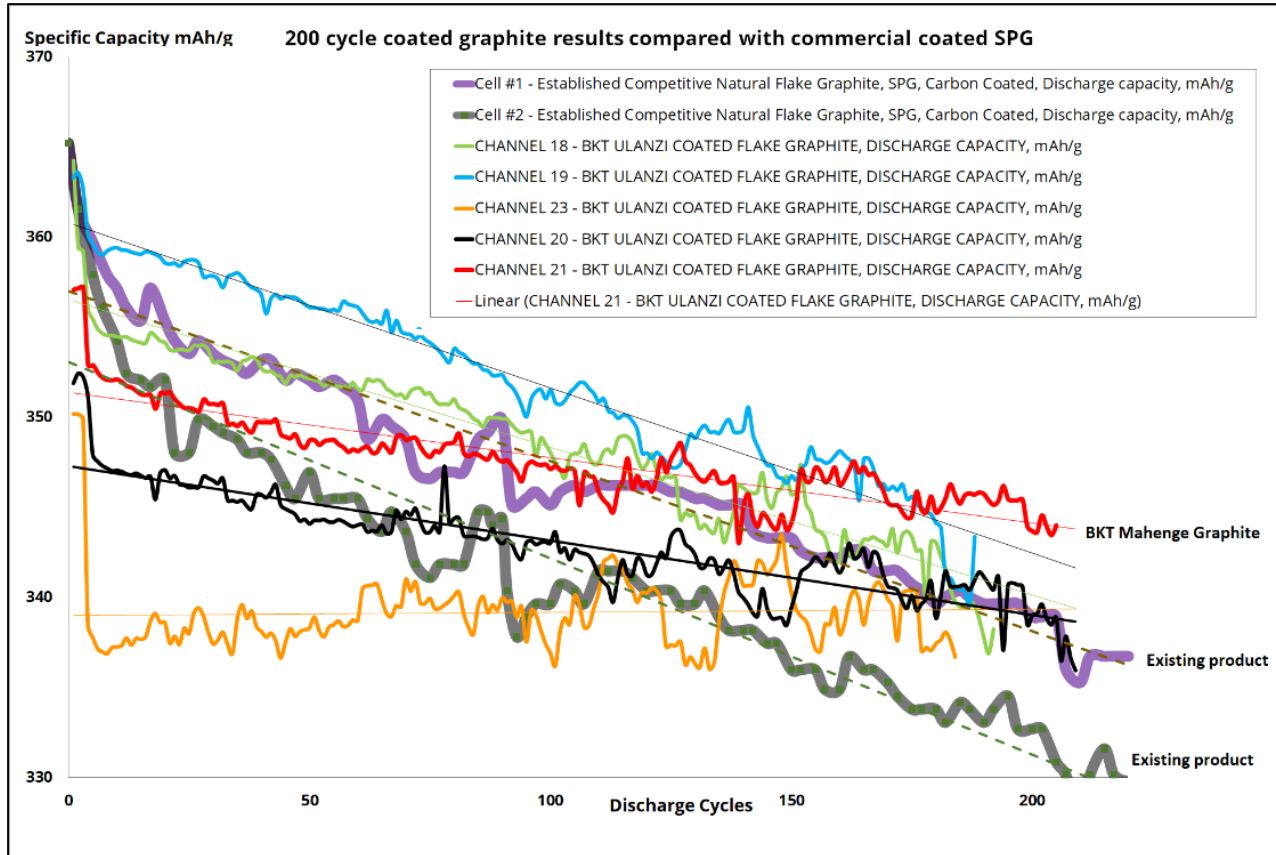


### BATTERY TESTING

- Long cycle data available to customers to facilitate acceptance testing

# Product Development

## 200 CYCLE TESTING



- The evidence from Mahenge graphite's performance at 200-cycles indicates it **strongly outperforms commercially available products**, potentially establishing new performance benchmarks of natural graphite in the battery market.
- Establishing new industry performance benchmarks is an important step in the Company's commercialisation strategy

# Tanzania Centric Operating Model



**BUILD SYSTEMS AND PROCESSES TO UPLIFT LOCAL SKILLS TO A POINT WHERE ASSET CAN BE RUN FROM WITHIN COUNTRY:**

- Bolt on/off
- Lower long term cost base
- Increased premium (bolt on/off)
- Consistent with legislative reset and credible risk management strategy

## TANZANIA

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- Operations & asset management
- P&L and Balance Sheet for asset accountability in country
- Build up systems and processes to support independent operations

## PERTH

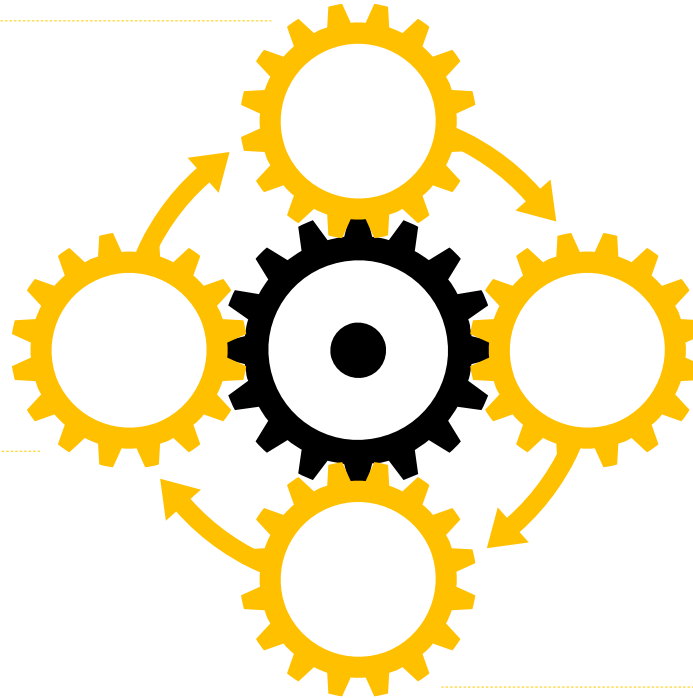
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- Governance
- CFO, Treasury
- Marketing
- HR & policy

# Tanzania Legislation

Black Rock Management believes the Mahenge Graphite Project works under the announced new mining framework

In the absence of a formal State Agreement, Black Rock Mining will be assuming the announced mining framework applies and it will use the framework subject to renegotiation of a few critical elements associated with financial stability



Black Rock Mining is in the process of submitting an EIS and is preparing for the new mining code via completing of an application for a Mining Licence under the existing legislation

Any State Agreement that is likely to be achieved in the medium term and will only enhance Black Rock Mining's position

## ONCE THE MINING CODE IS COMPLETED:

- Recommence some work as a sign of goodwill once mining is signed (Pilot Plant 1 – provides con for marketing)
- Resume DFS once mining licence is granted
  - Complete drill out and Pilot Plant 2
  - Commence engineering, organisational development and increase marketing

# Black Rock Mining Summary

## DEVELOPING THE MAHENGE GRAPHITE MINE

The Mahenge Graphite Project has a JORC Compliant Mineral Resource Estimate of 211.9 million tonnes at 7.8% Total Graphitic Carbon (“TGC”) for **over 16 million tonnes of contained graphite**.

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## INDUSTRY LEADING LOW CAPEX

The Company’s optimised PFS released in August 2017 estimates capex at US\$90.1m for phase one production of 83,000 tonnes per annum.

Phases two and three are self funded and adds a further 83,000 tonnes per annum each, taking total production to 250,000 tonnes per annum.

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## INDUSTRY LEADING MARGIN

Cash costs to port in full production estimated at US\$378 per tonne, significantly lower than most African peers.

With industry leading product concentrate grade and attributes selling price likely to be higher than other developers.

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## COMPELLING FINANCIAL METRICS

Post-tax unlevered project NPV<sub>10</sub> of USD \$905m after tax, inclusive of 16% free carried, inspection fee and royalty increase

EBITDA in first full year of production US\$220 million (EBITDA margin of 66%).

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## SIGNIFICANT SCALE OPPORTUNITIES

Ability to add scale or life given initial 32 year mine life uses around 30% of the Resource’s contained graphite.

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## EXPOSURE TO BATTERY THEMATIC

Lithium-ion batteries likely to dominate energy storage for growing electric vehicle and grid storage markets.

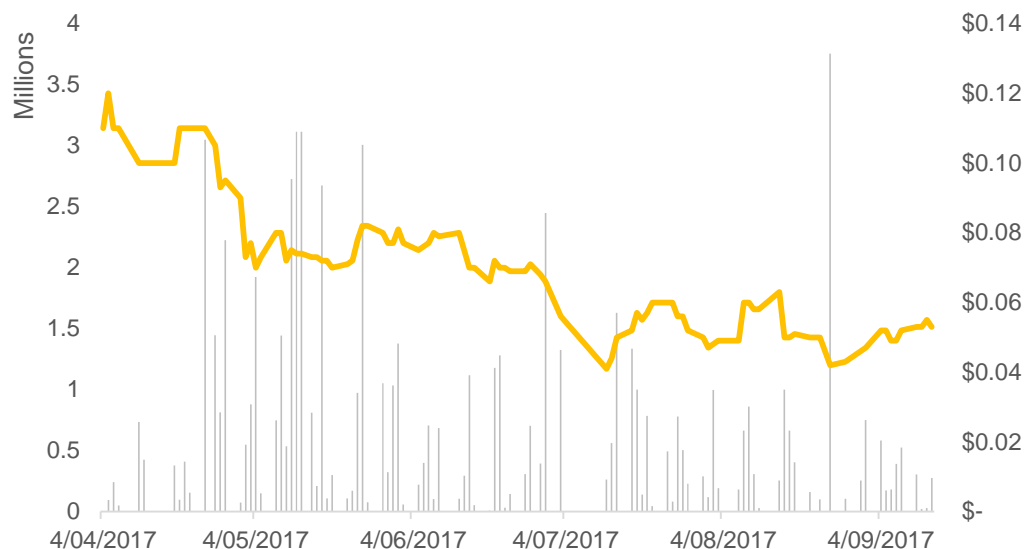
# Undemanding market cap for advanced world class project



## TRADING METRICS

ASX Ticker	BKT
Share Price	\$0.055
Shares on Issue	364.7m
Options	47.2m
Performance Rights	9.4m
Market Capitalisation	\$20m
Cash on hand as at 30 June 2017	\$2.14m
<b>Top 20 Shareholders</b>	<b>54.91%</b>
<b>Major shareholders</b>	
Stephen Copulos	24.63%

## SHARE PRICE (6-MONTHS)



## DIRECTOR AND EXECUTIVE MANAGEMENT

Stephen Copulos – Non-Executive Chairman  
John de Vries – CEO and Executive Director

Gabriel Chiappini – Non-Executive Director & Company Secretary  
Anthony Hall – Head of Strategy



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