

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

**Corporate Presentation May** 2017

Delivering a compelling low capex, high margin graphite mine

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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 AuslMM. 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.

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".

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# 1. Black Rock Mining Overview



#### Multi generational Resource

- The Mahenge Graphite Project has a JORC Compliant Mineral Resource Estimate of 203m tonnes at 7.8% Total Graphitic Carbon ("TGC") for **over 15m tonnes of contained graphite.**
- A JORC Compliant Reserve has been declared of 48.3m tonnes at 8.7% TGC for over 4m tonnes of contained graphite, with only 30% Resource utilisation.

#### Industry Leading Low Capex

- The Company's PFS released in April 2017 estimates capex at US\$90.1m for phase one production of 83k tonnes per annum.
- Phase two is self funded and adds a further 83k tonnes per annum taking total production to 167k tonnes per annum.

#### Industry Leading Margin

- Cash costs to port in full production estimated at US\$382 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.

#### Compelling Financial Metrics

- Post-tax unlevered project NPV10 of US\$624m (NPV8 of US\$798m) with a post tax, unlevered IRR of 48.2%.
- EBITDA in first full year of production US\$135 million (EBITDA margin of 66%).
- 32-year life of mine with average grade of 8.9% TGC.

#### Building Real Execution Capability

- Proven mine builder, John de Vries full time executive director and interim CEO.
- Other key appointments in train now PFS results have been released.

# 2. Capital Structure



### **Corporate Information**

| ASX Ticker                          | ВКТ     |
|-------------------------------------|---------|
| Share Price at 28 April 2017        | \$0.095 |
| Shares on Issue                     | 364.7m  |
| Options                             | 47.2m   |
| Performance Rights                  | 9.4m    |
| Fully Diluted Market Capitalisation | \$40.0m |
| Cash on hand as at 31 March 2016    | \$4.0m  |
| Enterprise Value                    | \$36.0m |
|                                     |         |
| Top 20 Shareholders                 | 54.91%  |
| Major shareholders                  |         |
| Copulos Group                       | 24.63%  |
| Gasmere Holdings                    | 8.91%   |

### **Recent share price performance**

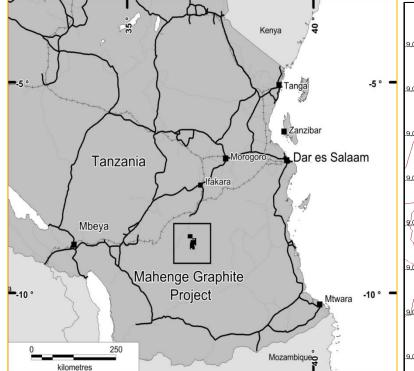


# 3. Mahenge Graphite Project



### 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 supported by close proximity to infrastructure.
- Reserve declared of 48.3m tonnes at 8.7% TGC\*\*
- Total Resource contains over 15m tonnes of graphite.





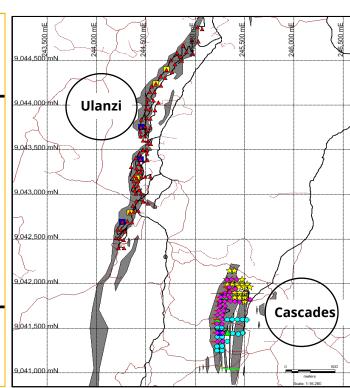


Image showing Ulanzi and Cascades localities. Grid spacing is 500m.

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

<sup>\*\*</sup> ASX Release of 24 April 2017



### Industry leading pre production capex, margin, concentrate grade with a multi-generational mine life

- Pre production capex of US\$90.1m\*
- Annual production from phase one of 83.3k tonnes of graphite
- Phase two self funded adding a further 83.3k tonnes pa
- Concentrate grade of 98% to 99%
- Initial mine life of 32 years
- Assumed feed grade of 8.9% TGC
- Life of mine strip ratio of 0.8:1 (early years are 0.5:1)
- LOM Cash costs of production of US\$382 per tonne
- Unlevered post tax NPV<sub>10</sub> of US\$624m (NPV<sub>8</sub> of US\$798m)
- Unlevered post tax IRR of 48.7%

#### Table showing the key parameters of the mine

| PARAMETER                                | UNITS       | STAGE 1 | STAGE 2 | TOTAL   |
|--|-------------|---------|---------|---------|
| Commence operation                       | Υ           | 1       | 3       |         |
| Nominal Mine Life                        | Υ           | 32      | 29      | 32      |
| Process Throughput                       | kt/y        | 1,000   | 1,000   | 2,000   |
| Nominal Ore Treated per stage            | Mt          | 32      | 30      | 62      |
| Average Feed Grade                       | TGC%        | 8.9     | 8.9     | 8.9     |
| Nominal strip ratio                      | Waste : Ore | 0.8     | 0.8     | 0.8     |
| Recovery                                 | %           | 93      | 93      | 93      |
| Nominal Design Basis Concentrate Grade   | TGC %       | 98 - 99 | 98 - 99 | 98 - 99 |
| Nominal Design Basis Graphite Production | kt/y        | 83      | 83      | 167     |

<sup>\*</sup> ASX Release of 24 April 2017



### Potential upside with relatively low price deck assumed in PFS business case

- PFS price deck delivered NPV<sub>10</sub> of US\$624m.
- Importantly concentrate grade is between 98% and 99% delivering industry leading concentrate grade.
- Average price deck of East African peers delivers an NPV<sub>10</sub> of US\$695m.
- Highest East African peer price deck with similar concentrate grades delivers an NPV<sub>10</sub> of US\$1,105m.
- NPVs delivered on industry leading low pre production capex of only US\$90.1m with stage two funded from cash flow.

#### Table showing the financial performance of the PFS mine under different sales prices

|                                    | FOB CHINA 3 YEAR<br>TRAILING PRICE<br>INVESTMENT CASE | FOB CHINA 3 YEAR<br>AMENDED FINES<br>RESERVE CASE | EAST<br>AFRICAN<br>PEER AVERAGE | HIGHEST PEER*    |
|------------------------------------|---|---|---------------------------------|------------------|
| PRICING                            | USD \$/T FOB DAR                                      | USD \$/T FOB DAR                                  | USD \$/T FOB DAR                | USD \$/T FOB DAR |
| 500 um                             | 2,235   | 2,235   | 3,527                           | 3,948            |
| 300 um                             | 1,676   | 1,676   | 2,237                           | 2,664            |
| 180 <i>um</i>                      | 1,287   | 1,287   | 1,522                           | 1,894            |
| 150 <i>um</i>                      | 1,144   | 1,144   | 1,020                           | 1,701            |
| 75 um                              | 998   | 898   | 821                             | 1,220            |
| -75 um                             | 892   | 568   | 568                             | 1,027            |
| Basket Price LoM                   | 1,241   | 1,174   | 1,346                           | 1,777            |
| Basket Price Ulanzi                | 1,201   | 1,123   | 1,261                           | 1,694            |
| Basket Price Cascade               | 1,281   | 1,226   | 1,435                           | 1,862            |
| Post tax IRR                       | 49%   | 45%   | 52%                             | 74%              |
| Post Tax NPV <sub>8</sub> \$USD M  | 798   | 713   | 891                             | 1,391            |
| Post Tax NPV <sub>10</sub> \$USD M | 624   | 554   | 695                             | 1,105            |

<sup>\*</sup> Peer concentrate grade spec is 98.3% which is directly comparable to the BKT spec of 98 to 99%

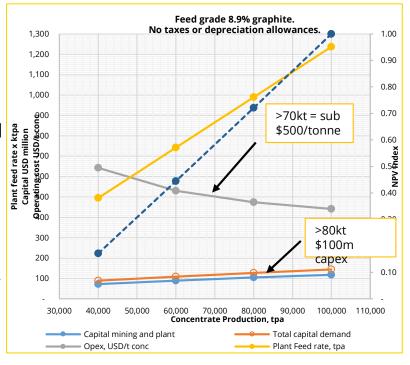


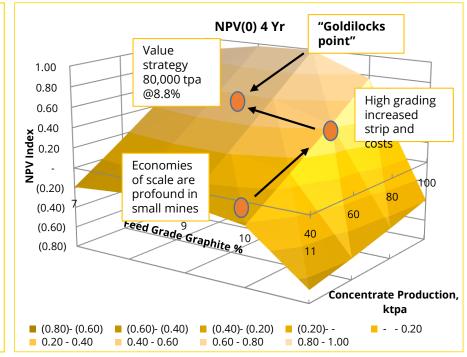
### Mine optimised to deliver right sized capex, opex, annual production

- Mine optimisation work focused on capex, opex, grade and strip ratios.
- Optimisation work found it was better to accept a lower head better to accept a lower head grade of 8.9% TGC as this delivered an exceptionally low strip life of mine strip ratio of 0.8:1.

  The low strip ratio reduces mining
- risk as selectivity is reduced.
- Mine is right sized to be investable, fundable and to generate longer term meaningful returns.

#### Graphs showing the results of over 100 scenario analysis used to determine optimum mine size and grade



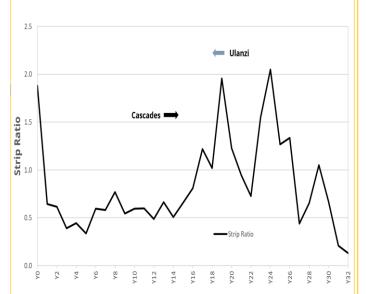


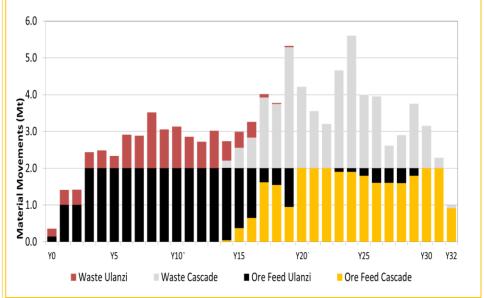


### Mining risk significantly reduced with low strip ratios and most of resource being mined

- Project has relatively high-grade, large resource and very consistent mineralised horizon.
- This delivers exceptionally low life of mine mineral movements of only 18 tonnes per tonne of concentrate produced.
- This delivers very low relative opex and ensures the project sits in the bottom quartile of cash costs to port against all developers.
- Mining risks from grade control are substantially reduced with a majority of the Resource sent to the mill.

#### **Graphs showing life of mine strip ratios**







### Light touch mine with best practice mine design

- Mine designed using environmental light touch philosophy.
- Waste dumps integrated into landforms to act as tailings dam retention and codispose of wastes.
- No villages proximal to project area.
- Disturbed land limited to subsistence farming and open grazing land.
- Real jobs in country Site head count of 400 employees + 60 for logistics.
- 150 kt of production @ 4.5 7.5 Gw/hr of storage in final markets.
- Stage II national grid with hydro power.

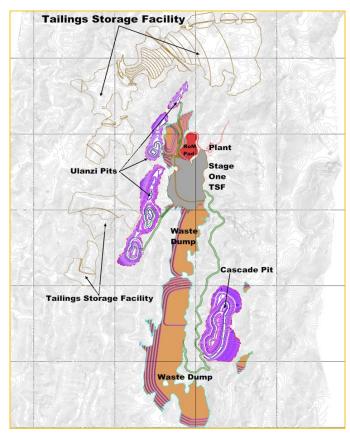


Image showing proposed mine and tailings location

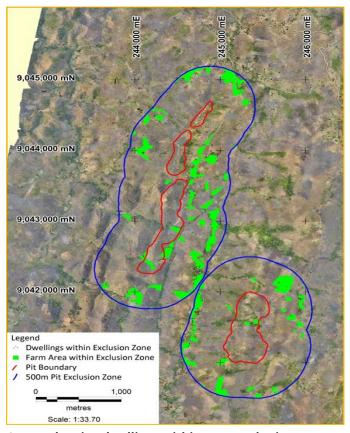
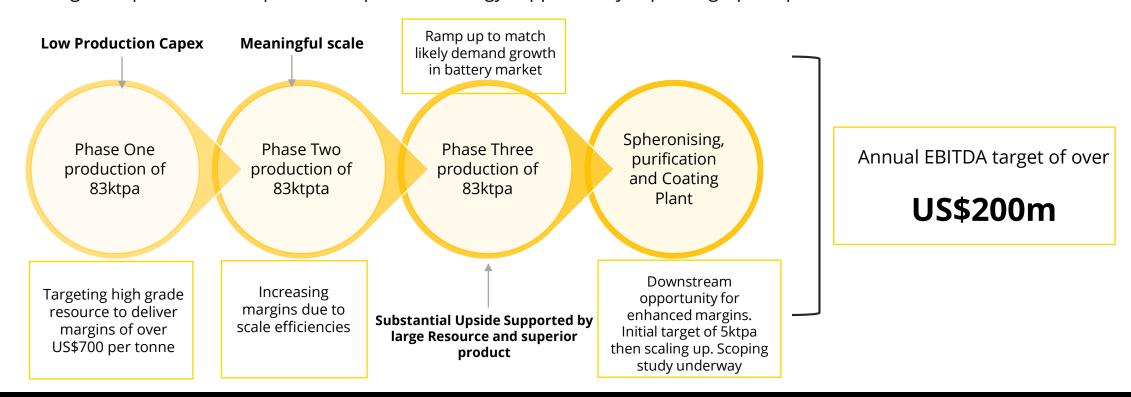


Image showing dwellings within proposed mine zone



### 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



# 5. Peer Comparison



### Industry leading low capex with scale comparing favourably to all developers

#### Summary table of key metrics for East African graphite developers

|               |                                 | Battery Minerals | Black Rock   | Kibaran Resources | Magnis Resources | Syrah           | Volt Resources |
|---------------|---------------------------------|------------------|--------------|-------------------|------------------|-----------------|----------------|
| ummary        | Project                         | Montepuez        | Mahenge      | Mahenge           | Nachu            | Balama          | Namangale      |
|               | Country                         | Mozambigue       | Tanzania     | Tanzania          | Tanzania         | Mozambique      | Tanzania (Sth) |
|               | Ticker                          | BAT.AX           | BKT.AX       | KNL.AX            | MNS.AX           | SYR.AX          | VRC.AX         |
|               | Project stage                   | DFS              | PFS          | BFS               | DFS              | Construction    | PFS            |
|               | Study Date                      | Feb-17           | Apr-17       | Jul-15            | Mar-16           | Dec 16 update   | Dec-16         |
| esource       | M&I Resource                    | 54Mt @ 8.3%      | 102Mt @ 8.0% | 20Mt @ 9.9%       | 124Mt @ 5.2%     | 261Mt @ 11.0%   | 175Mt @ 5.0%   |
|               | Total Resource                  | 105Mt @ 9.4%     | 203Mt @ 7.8% | 31Mt @ 9.9%       | 174Mt @ 5.4%     | 1,191Mt @ 11.0% | 461Mt @ 4.9%   |
|               | Contained M & I TGC (Mt)        | 4.48             | 8.16         | 1.98              | 6.45             | 28.71           | 8.75           |
|               | Reserve/inventory               | 41.4m @ 8.8%     | 48m @ 8.7%   | 10.9Mt @ 8.6%     | 76Mt @ 4.8%      | 114Mt @ 16.6%   | 127Mt @ 4.4%   |
| roduction     | Mine life (years)               | 30               | 32           | 25                | 15               | 42              | 22             |
|               | Strip Ratio (x)                 | 0.6              | 0.8          | 1.0               | 1.5              | 1.0             | 1.4            |
|               | Plant throughput (kt pa)        | 1381             | 2000         | 434               | 5000             | 2000            | 3800           |
|               | Head Grade (%)                  | 8.8%             | 8.9%         | 8.6%              | 4.8%             | 16.2%           | 4.7%           |
|               | Graphite con prod'n (kt pa)     | 100              | 167          | 36                | 220              | 313             | 170            |
|               | Recovery (%)                    | 73.3%            | 93.0%        | 93.3%             | 92.0%            | 92.5%           | 93.0%          |
|               | Processed rock:product          | 16               | 12           | 12                | 23               | 7               | 23             |
|               | Mined rock:product              | 25               | 22           | 25                | 57               | 13              | 55             |
|               | Mined rock:large/jumbo product  | 82               | 32           | 45                | 86               | 65              | 122            |
| osts          | Mining cost (US\$/t con)        | US\$59/t         | US\$89/t     | US\$117/t         | US\$217/t        | US\$33/t        | US\$243/t      |
|               | Processing cost (US\$/t con)    | US\$90/t         | US\$133/t    | US\$277/t         | US\$165/t        | US\$84/t        | US\$182/t      |
|               | Logistics and SG&A (US\$/t con) | US\$151/t        | US\$160/t    | US\$176/t         | US\$177/t        | US\$169/t       | US\$111/t      |
|               | FOB cash cost (US\$/t con)      | US\$422/t        | US\$382/t    | US\$570/t         | US\$490/t        | US\$286/t       | US\$536/t      |
| арех          | Capex (US\$m)                   | US\$126m         | US\$159m     | US\$77m           | US\$269m         | US\$193m        | US\$173m       |
|               | Pre Production Capex (US\$m)    | US\$126m         | US\$90m      | US\$77m           | US\$269m         | US\$193m        | US\$173m       |
| letallurgical | Large / jumbo (% relative)      | 30.4%            | 67.6%        | 55.4%             | 66.0%            | 20.5%           | 45.0%          |
|               | Large / jumbo (% absolute)      | 2.0%             | 5.6%         | 4.4%              | 2.9%             | 3.1%            | 2.0%           |
|               | Purity - mine gate (%)          | 96.0%            | 98.5%        | 96.3%             | 98.3%            | 95.0%           | 95.0%          |

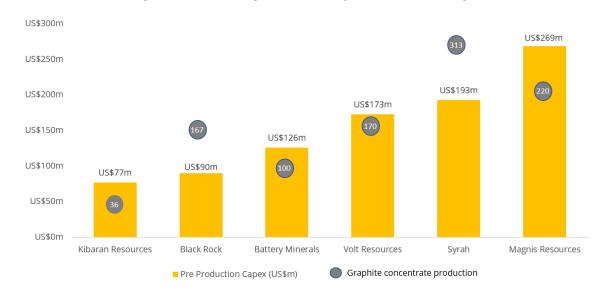
Source - Company ASX Releases

# 5. Peer Comparison



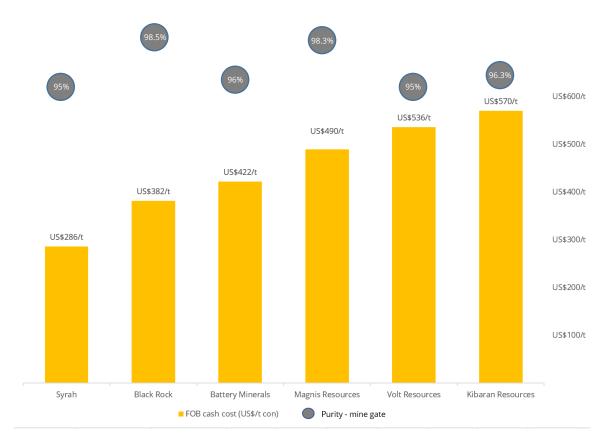
### Industry leading low capex with highest margin likely due to low opex and high concentrate grade

#### Pre-production capex v steady state annual production



|                                 | Battery<br>Minerals | Black Rock | Kibaran<br>Resources | Magnis<br>Resources | Syrah     | Volt Resources |
|---------------------------------|---------------------|------------|----------------------|---------------------|-----------|----------------|
| Concen prod'n (kt pa)           | 100                 | 167        | 36                   | 220                 | 313       | 170            |
| Pre Production Capex<br>(US\$m) | US\$126m            | US\$90m    | US\$77m              | US\$269m            | US\$193m  | US\$173m       |
| FOB cash cost (US\$/t con)      | US\$422/t           | US\$382/t  | US\$570/t            | US\$490/t           | US\$286/t | US\$536/t      |
| Purity - mine gate (%)          | 96.0%               | 98.5%      | 96.3%                | 98.3%               | 95.0%     | 95.0%          |

#### Estimated cash costs to port and concentrate grade



# 5. Peer Comparison



### Industry leading battery test results and advancement

## Mahenge graphite is returning excellent electrochemical attributes

- ✓ Near perfect reversible capacity, higher than natural and synthetic graphites on market
- ✓ Low BET surface area results, Low irreversible capacity loss
- Cycling tests indicate exceptionally stable graphite low degradation observed
- Results attributable to high purity, exceptionally thick graphite flakes

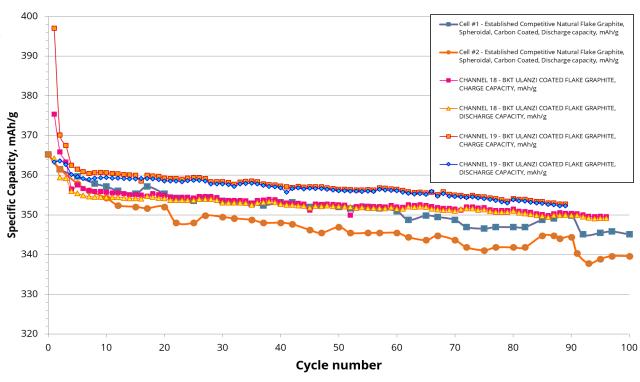
#### Potential to:

- Have higher spheronising yields due to thick flake
- lower the cost of Lithium ion cells
- Increase the cycle life of batteries due to higher stability graphite

### Differentiating Mahenge Graphite

- Tests indicate superior battery attributes to current natural and synthetic graphites on the market
- > Hard data and samples available to battery manufacturers let the product talk for itself

#### Mahenge 100 cycle test results



## 6. Execution



### Disciplined focus on four streams to ensure best result for stakeholders

## CORPORATE AND STRATEGY

- Global search in train to find the right CEO with mining and public markets experience.
- Head of Strategy recently appointed with significant global strategy and public markets experience.

#### **PROIECT**

- COO appointed in March 2017 who was responsible for the delivery of an exceptional PFS.
- Optimisation study in train to build out third phase to ensure commencement of final studies, detailed engineering and construction drawings are based on the right size longer term mine.
- Capex focus to ensure mine is fundable and investible.

# PRODUCT DEVELOPMENT AND PARTNERS

- MOU signed with Japanese firm Meiwa Corporation. Meiwa are participants in the global battery Market with an interest in a Chinese spheronising and coating plant.
- Ongoing discussions with other potential partners likely to be driven by compelling PFS metrics.
- Product testworks continue to demonstrate industry leading attributes.

## COMMUNITY AND LICENSING

- Environmental Impact Assessment completed & Environmental Managment Plan in train.
- Mining Licence Application 6259 Licence issued with Environmental Management Plan.
- Light touch environmental focus with mine design.
- Minimal impact on existing communities.

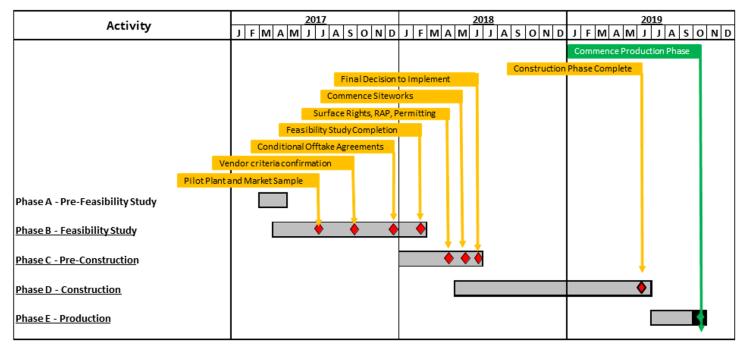
# 7. Next Steps



### PFS Optimisation to deliver third phase with capability quickly enhanced

- Build out team
- Complete PFS optimisation study to deliver a third phase to raise overall production to 250k tonnes per annum
- Progress potential partner discussions with a focus on product development
- Finalise ESIA and submit final licence application
- Target commencement of construction remains April 2018 with first production in mid 2019

#### Proposed timeline to production



# 8. Summary



#### Multi generational Resource

- The Mahenge Graphite Project has a JORC Compliant Mineral Resource Estimate of 203m tonnes at 7.8% Total Graphitic Carbon ("TGC") for **over 15m tonnes of contained graphite.**
- A JORC Compliant Reserve has been declared of 48.3m tonnes at 8.7% TGC for over 4m tonnes of contained graphite, with only 30% Resource utilisation.
- Sustainable footprint embedded in mine design

#### Industry Leading Low Capex

- The Company's PFS released in April 2017 estimates capex at US\$90.1m for phase one production of 83k tonnes per annum.
- Phase two is self funded and adds a further 83k tonnes per annum taking total production to 167k tonnes per annum.

#### Industry Leading Margin

- Cash costs to port in full production estimated at US\$382 per tonne, significantly lower than most African peers.
- With industry leading product concéntrate grade and attributes selling price likely to be higher than other developers

#### Compelling Financial Metrics

- Post-tax unlevered project NPV10 of US\$624m (NPV8 of US\$798m) with a post tax, unlevered IRR of 48.2%
- EBITDA in first full year of production US\$135 million (EBITDA margin of 66%)
- 32-year life of mine with average grade of 8.9% TGC

#### Building Real Execution Capability

- Proven mine builder, John de Vries full time executive director and interim CEO.
- Other key appointments in train now PFS results have been released.

## **Appendix - Mahenge JORC Mineral Resource Estimate**



| Prospect | Category  | Tonnes<br>(Millions) | TGC<br>(%) | Contained TGC<br>(Millions<br>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                                  |

### **Resource Summary**

| Category  | ategory Tonnes TGC<br>(Millions) (%) |     | Contained<br>Graphite (mt) |  |
|-----------|--------------------------------------|-----|----------------------------|--|
| 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                       |  |

### **Reserve Summary**

| Category | Tonnes<br>(Millions) | TGC<br>(%) | Contained<br>Graphite (mt) |
|----------|----------------------|------------|----------------------------|
| Proven   | -                    | -          | -                          |
| Probable | 48.3                 | 8.7        | 4.2                        |
| TOTAL    | 48.3                 | 8.7        | 4.2                        |

ASX Release - 12 December 2016 and 24 April 2017



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