

# Quarterly Report March 2016



29 April 2016

## Highlights

- Maiden JORC resource of 131.1Mt @7.9% TGC at the Mahenge Project including 37.6Mt @10.2% TGC or 16.7Mt@ 11.1% TGC
- Largest and highest grade contained graphite resource in Tanzania and the fourth largest in the World
- Metallurgical test work returns high coarse graphite flake yields with 98.27% purity. Detailed metallurgical programme underway to further optimise results to date
- Scoping Study returns excellent results of US\$287m NPV<sub>10</sub> and a 2-year payback for a 50,000tpa plant and US\$57.3m Capex . Pre Feasibility Study underway, results expected August
- Graphite marketing underway targeting long term offtake agreements
- Final drilling programme underway to widen the mineralised zone at Ulanzi, define high grade surface mineralisation and to develop a resource at Cascade

**Black Rock Mining Limited (ASX.BKT) (“Black Rock Mining” or “the Company”)** is pleased to present its March quarterly report and provide an update on the development activities at its 100% owned Mahenge Graphite Project. Significant developments to occur during the quarter include:

Maiden JORC resource of 131.1Mt @ 7.9% TGC at the Mahenge Graphite Project: The JORC resource is the largest and highest grade contained graphite resource in Tanzania and features significant high grade portions that will be utilised to enhance the first 25 years of mine life. Approximately 40% of the resource tonnes are classified in the Indicated Resource Category, with an expected increase to occur following the current infill drill programme.

Solid Scoping Study results: The Scoping Study results were announced on the 22<sup>nd</sup> of March 2016 and delivered a NPV<sub>10</sub> of US\$286m for a capital cost of US\$57.3m for a 52,000 tpa process plant. Capital payback is expected to be two years with an IRR of 62%. More significantly, the estimated cash costs of production of US\$458/t are the lowest in Tanzania and reflect the high ore feed grade of 10.5%. The Company is focused on delivering a low capex operation that will have the lowest operating costs in Tanzania.

Cautionary Statement: The Scoping Study referred to in this report is based on low-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realised.

## The Mahenge Project JORC resource

The Mineral Resource Estimation was conducted by Trepanier Pty Ltd, an independent geological consultancy.

The global resource of 131.1Mt@ 7.9% TGC hosts 10.4Mt of contained graphite, making the Mahenge Project the largest and highest grade flake graphite resource in Tanzania. In Global terms, Mahenge is the third largest JORC compliant graphite resource in Africa or the fourth largest in the World. Across the project, 40% of the total resource tonnes are classified as Indicated.

The large Mahenge mineral resource offers significant **flexibility** for potential development into a long life (+30 year) mining operation. It has potential to be mined from multiple zones at low strip ratios, high-graded to accelerate capital payback in early years and can be scaled up in future due to the large resource. Metallurgical test work indicates straightforward production of coarse graphite flake with excellent purities.

**Table 1. Mahenge Global resource summary reporting table (Indicated and Inferred Category).**

Category	Tonnes (Millions)	TGC (%)	Contained TGC (Millions tonnes)
Indicated	52.5	7.7	4.0
Inferred	78.6	8.1	6.4
<b>TOTAL</b>	<b>131.1</b>	<b>7.9</b>	<b>10.4</b>

Note: appropriate rounding applied

**Table 2. Resource breakdown by prospect.**

Prospect	Category	Tonnes (Millions)	TGC (%)	Contained TGC (Millions tonnes)
<b>Ulanzi</b>	Indicated	35.0	8.3	2.9
	Inferred	45.5	8.7	4.0
	<b>Sub-total</b>	<b>80.5</b>	<b>8.5</b>	<b>6.9</b>
<b>Epanko</b>	Indicated	17.6	6.4	1.1
	Inferred	20.8	5.9	1.2
	<b>Sub-total</b>	<b>38.4</b>	<b>6.1</b>	<b>2.3</b>
<b>Cascade</b>	Indicated	-	-	-
	Inferred	12.3	9.5	1.2
	<b>Sub-total</b>	<b>12.3</b>	<b>9.5</b>	<b>1.2</b>
<b>COMBINED</b>	<b>INDICATED</b>	<b>52.5</b>	<b>7.7</b>	<b>4.0</b>
	<b>INFERRED</b>	<b>78.6</b>	<b>8.1</b>	<b>6.4</b>
	<b>TOTAL</b>	<b>131.1</b>	<b>7.9</b>	<b>10.4</b>

Note: appropriate rounding applied

## Mahenge Project global resource breakdown by cut-off grades

Table 3 and Figure 1 below shows the Mahenge global resource at varying cut-off grades and the corresponding grade-tonnage curve respectively. Of note is that a significant high-grade resource is contained within the global 131.1Mt @7.9% TGC resource. At a 9% cut-off, a high-grade portion of 37.6Mt@ 10.2% TGC is available (highlighted) or at a 10% cut-off, a 16.6.Mt resource exists at 11.1% TGC.

**Table 3. Mahenge global resource by grade cut-off.**

Mahenge global resource by grade cut-off Indicated and Inferred		
Cut-off TGC%	Million T	TGC %
0	131.1	7.9
1	131.1	7.9
2	131.1	7.9
3	131	7.9
4	130.2	7.9
5	124.1	8.1
6	107.6	8.5
7	88.3	8.9
8	64.3	9.5
9	37.6	10.2
10	16.6	11.1
11	6.6	12
12	2.7	13
13	0.9	14
14	0.3	15
15	0.1	15.9

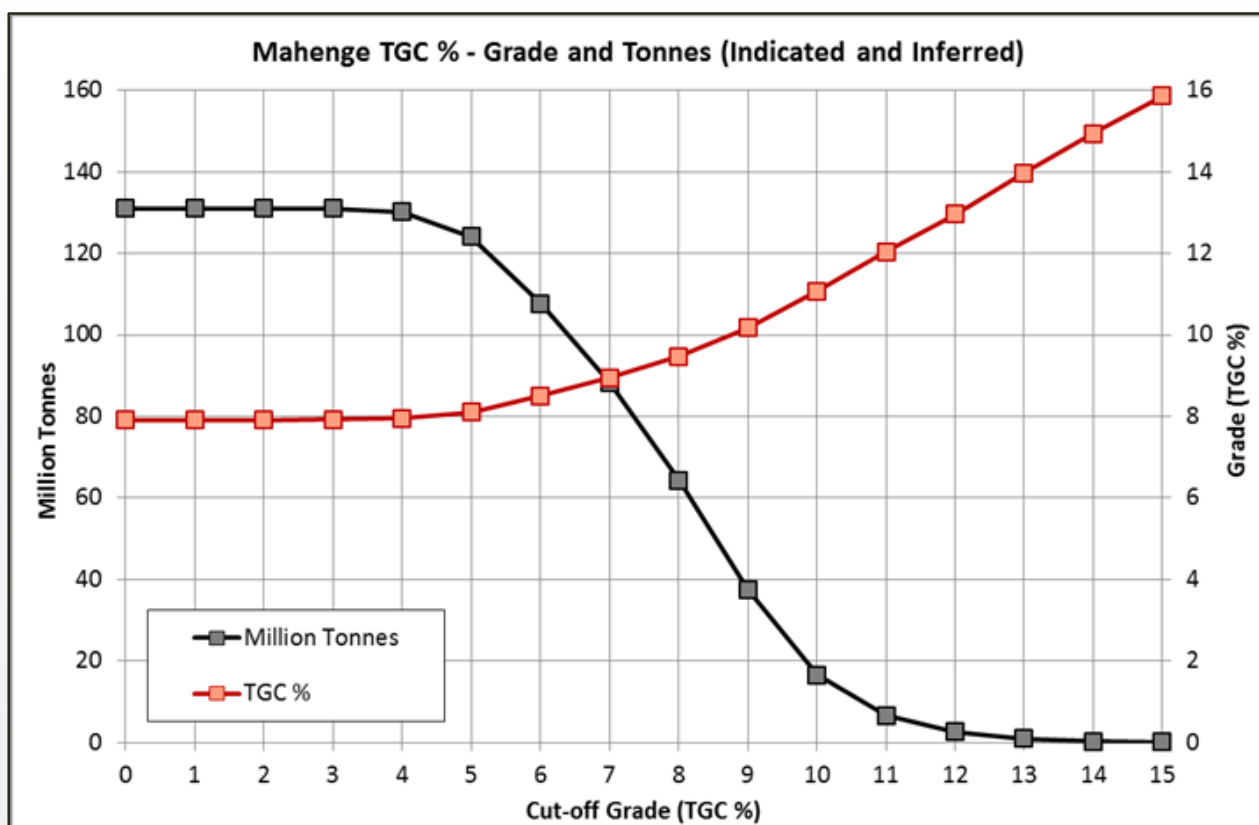


Figure 1. Global Mahenge TGC% grade-tonnage curve.

## Mahenge Project Scoping Study Results

The Scoping Study was completed by consultant, BatteryLimits Pty Ltd, and confirms strong scoping economics for a long-life, low cost graphite concentrate mining operation at the Mahenge Graphite Project.

Following the receipt of positive results from the Scoping Study, the Board approved the Pre-Feasibility Study for the Mahenge Graphite Project. The Company has also commenced more detailed metallurgical test work to continue optimising the process flowsheet and will commence a final drill programme in late April to upgrade the current 131.1Mt @ 7.9% Mineral Resource and provide additional metallurgical samples.

Chairman Stephen Copulos commented: “The highly positive Scoping Study is another significant milestone for Black Rock Mining Shareholders, following the recently announced large-scale JORC resource in February. The large resource with high-grade portions, straightforward metallurgy and coarse flake product are now further enhanced by positive Scoping Study economics. The Company has commenced PFS activities and looks forward to updating Shareholders over the coming months with results.”

The Scoping Study results are summarized in Table 4 below, indicating potential to establish a long life and low cost mining operation for a 50,000tpa production case.

Description	Unit	50,000 tpa case
Plant throughput	Tpa	500,000
Plant recovery	%	93.0
Feed Grade	%TGC	10.5
Concentrate Production	tpa	52,000
Cash cost of production	US\$/t	450
Basket Sales Price	US\$/t	1,236
Mine Life	years	25
Capital cost – pre production	US\$M	57
Mine strip ratio	Waste: ore	1.23:1
Discount Rate	%	10
<b>NPV</b>	US\$M	<b>285.7M</b>
<b>IRR</b>	%	<b>62%</b>
Payback	years	2

Table 4. Summary of key financial results from Scoping Study

Cautionary Statement: The Scoping Study referred to in this report is based on low-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realised.

The primary objective of the scoping study was to identify the most efficient development opportunity that would yield the best return on the Company’s investment and minimise capital expenditure.

The scoping study reviewed three production scenarios: 31,000tpa, 42,000tpa and 52,000tpa. The 52,000tpa case predictably returned the best economics of the three alternatives due to scale economies and as such is the assumed production case. A larger throughput option will be reviewed as part of the next stage of economic assessment.

Scope for material cost reduction: Mining costs of US\$5.00/t have been assumed for both ore and waste at an ore to waste strip ratio of 1:1.23. There is significant scope to improve mining costs through optimising the strip ratio, re-calculating the cost of free digging material for the top 20m of the resource, reviewing an owners' fleet, and adjusting the cut-off grade.

### Capital cost estimate

Capital costs have been estimated for a 500,000tpa mill feed rate. The Scoping study was completed to an accuracy of +/-35% for capital and operating costs.

Item	Cost USD\$
Process Plant	\$28,575,981
Site Infrastructure	\$11,478,255
Offsite infrastructure	\$104,171
Equipment and spares	\$706,126
EPCM (first three line items)	\$6,023,761
Contingency (four line items)	\$6,129,680
Owners Costs	\$4,302,642
<b>Total</b>	<b>\$57,320,616</b>

Table 5. Capital Cost estimate summary.

### Operating cost estimate

Item	Graphite Production Scenario					
	31000 t/y		42,000 t/y		52,000 t/y	
	LOM US\$/y	US\$/t conc.	LOM US\$/y	US\$/t conc.	LOM US\$/y	US\$/t conc.
Mining	3,861,464	123	4,963,630	118	6,574,200	127
Processing and Power	6,854,931	219	7,056,100	168	7,217,384	139
General and Administration	4,961,505	158	4,961,505	118	4,961,505	96
Product logistics FOB	3,047,001	97	4,088,370	97	5,049,204	97
<b>Total</b>	<b>18,724,900</b>	<b>598</b>	<b>21,069,605</b>	<b>501</b>	<b>23,802,293</b>	<b>458</b>

Table 6. Operating Cost estimate summary.

Operating costs for life of mine are calculated to be US\$458/t of concentrate.

## Metallurgical programme

Comprehensive metallurgical test work has been completed on Epanko north and Ulanzi core – both in oxide and primary zones. Additional work has been completed on a surface bulk sample at Ulanzi. Results for all five test programmes are excellent, indicating straightforward processing.

The bulk sample optimisation results tabled below show that processing adjustments continue to improve graphite purities. The entire +75 to +500 micron portion of flake graphite is now achieving >97.1% TGC purity and this represents 98.3% of all graphite produced. There is excellent scope to continue increasing flake purities with additional cleaner work over the next few months.

Of significance is that the Ulanzi bulk sample has a bias towards coarse sizing. 66.3% of the flake graphite produced by this test work is >180 microns in size (coarse, jumbo and super jumbo sizing) and this size fraction typically receives a price premium to finer flake. This has potential to improve the basket pricing from the scoping study where 50% coarse sizing was assumed.

New metallurgical samples will be sent from Tanzania over the coming months to comprehensively test additional portions of the Ulanzi and Cascade lodes. Two more bulk surface samples and drill core samples are being prepared.

Additional test work is planned to determine chemically upgraded purity and the suitability of Mahenge graphite flake for a suite of value-added applications including; expanded graphite, expandable graphite, spherical graphite test work and other industrial applications. The metallurgical programme is expected to continue for the next four to six months, in parallel with the Pre Feasibility and Bank feasibility studies.

<b>Screen Size Microns</b>	<b>TGC Assay %</b>	<b>Distribution %</b>	<b>Cumulative distribution %</b>	<b>Weighted Average %</b>
<b>+500 µm</b>	<b>98.2</b>	<b>1.52</b>	<b>1.52</b>	<b>98.2</b>
<b>+300 µm</b>	<b>97.7</b>	<b>25.61</b>	<b>27.13</b>	<b>97.73</b>
<b>+180 µm</b>	<b>97.1</b>	<b>39.48</b>	<b>66.61</b>	<b>97.35</b>
<b>+150 µm</b>	<b>96.4</b>	<b>9.15</b>	<b>75.76</b>	<b>97.24</b>
<b>+106 µm</b>	<b>96.7</b>	<b>11.08</b>	<b>86.84</b>	<b>97.17</b>
<b>+75 µm</b>	<b>96.8</b>	<b>6.49</b>	<b>93.34</b>	<b>97.14</b>
<b>+25 µm</b>	<b>96.6</b>	<b>4.98</b>	<b>98.32</b>	<b>97.12</b>
<b>-25 µm</b>	<b>85.7</b>	<b>1.68</b>	<b>100</b>	<b>96.90</b>

## Final Drill programme

The December Quarter drill data indicated that a modest amount of additional drilling has good potential to significantly increase the overall graphite mineralised zone at Ulanzi and highlight additional high grade areas at or near surface. A decision has been made to utilise the drill rigs available onsite to drill an additional 20 drill holes.

10-12 additional drill holes are also planned at Cascade to follow up the consistent >10-11% TGC zones from the four holes drilled in 2015. The Cascade western lode structure is 1km in length with only four holes drilled to date at the northern end.

The objective of this final programme is to have sufficient data to calculate Measured and Indicated Resources for the majority of the resource.

## Summary and Planned work for June Quarter

The March 2016 quarter successfully delivered three critical milestones;

- 1) The largest and highest grade JORC resource in Tanzania, fourth largest in the World;
- 2) A compelling Scoping Study Report with excellent key financial results. NPV of US\$287m for a US\$57.3m capital cost; and
- 3) Comprehensive metallurgical test work results which clearly demonstrate that premium graphite concentrates can be made from a straightforward flotation circuit

The absolute focus going forward is to complete detailed technical and financial studies over the next six months to deliver a bank financeable project. Specifically the company plans to progress the following activities in the coming quarter:

- Completion of the bulk of the Pre Feasibility Study activities
- Final drill programme underway to define additional high grade zones at Ulanzi and to develop a resource at the high-grade Cascade western lode
- The Metallurgical test work programme is ongoing and continues to deliver significant improvements in concentrate purities and maximising flake size. Additional core and bulk samples will be tested from additional portions of the Ulanzi and Cascade mineralised zones
- Additional test work to determine the suitability of Mahenge concentrates to produce spherical graphite, expandable graphite and commercial scale graphene
- Marketing to graphite end users. Graphite concentrates have been prepared for distribution.

Managing Director of Black Rock Mining commented: *“The March Quarter successfully delivered the largest and highest grade JORC resource in Tanzania, an extremely robust scoping study and compelling metallurgical results. These three key milestones are the result of a highly successful exploration programme in 2015 and form a solid platform from which to complete financial, technical and marketing studies over the next six months. In particular, we are pleased that the Scoping Study indicates that a relatively straightforward and small-scale plant of 52,000tpa can offer potentially high returns due to the high-grade, near surface and coarse flake nature of the resource. A smaller, relatively simple plant will require less capital and time to develop and in-turn decreases commissioning risk.”*

### **For further information please contact:**

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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 has graphite tenure in the Mahenge region, Tanzania, a country which hosts world-class graphite mineralisation. Drilling of the Epanko north prospect was completed in August 2015 and infill drilling of two new graphite discoveries, the Ulanzi and Cascade prospects, is nearing completion. The Company plans to announce a Mahenge JORC compliant resource in February 2015 and then commercialise the project.*

*The company is building a skill and knowledge base to become an explorer, developer and diversified holder of resources. Shareholder value will be added by:*

- *identifying and securing projects with economic potential*
- *focussing on tenure that can be commercialised by converting into JORC compliant resources; and*
- *taking these resources into production*

*Our focus is on establishing a JORC resource from three advanced prospects at Mahenge, Ulanzi, Epanko north and Cascade, whilst further adding resource upside through exploration at Kituti.*

### Competent Person Statement

The information in this report that relates to Exploration Results is based on information compiled by Steven Tambanis, who is a member of the AusIMM. He is an employee of Black Rock Mining Limited. 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'. Steven Tambanis consents to the inclusion in the report of the matters based on their information in the form and context in which it appears, including the Exploration target, previously announced on 19 October 2015.

**Cautionary Statement:** The Scoping Study referred to in this report (released to ASX on 22 March 2016) is based on low-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realised.



## Appendix 5B

### Mining exploration entity quarterly report

Introduced 01/07/96 Origin Appendix 8 Amended 01/07/97, 01/07/98, 30/09/01, 01/06/10, 17/12/10, 01/05/2013

Name of entity

**Black Rock Mining Limited**

ABN

**59 094 551 336**

Quarter ended ("current quarter")

**31 March 2016**

### Consolidated statement of cash flows

Cash flows related to operating activities	Current quarter \$A'000	Year to date (9 months) \$A'000
1.1 Receipts from product sales and related debtors	0	0
1.2 Payments for (a) exploration & evaluation – graphite	(1,061)	(3,242)
(b) development	0	0
(c) production	0	0
(d) administration	(241)	(904)
1.3 Dividends received	0	0
1.4 Interest and other items of a similar nature received	7	10
1.5 Interest and other costs of finance paid	0	0
1.6 Income taxes paid	0	0
1.7 Other (provide details if material) – employee entitlement for annual leave and long service leave for redundant employee	0	0
1.8 Other (provide details if material) – research and development incentive received	0	0
<b>Net Operating Cash Flows</b>	<b>(1,295)</b>	<b>(4,136)</b>
<b>Cash flows related to investing activities</b>		
1.8 Payment for purchases of: (a) prospects	0	0
(b) equity investments	0	0
(c) other fixed assets	0	0
1.9 Proceeds from sale of: (a) prospects	0	0
(b) equity investments	0	238
(c) other fixed assets	0	0
1.10 Loans to other entities	0	0
1.11 Loans repaid by other entities	0	0
1.12 Other (provide details if material)	0	0
<b>Net investing cash flows</b>	<b>0</b>	<b>238</b>
1.13 Total operating and investing cash flows (carried forward)	<b>(1,295)</b>	<b>(3,898)</b>

+ See chapter 19 for defined terms.

**Appendix 5B****Mining exploration entity and oil and gas exploration entity quarterly report**

1.13	Total operating and investing cash flows (brought forward)	(1,295)	(3,898)
<b>Cash flows related to financing activities</b>			
1.14	Proceeds from issues of shares, options, etc.	768	5,000
1.15	Proceeds from sale of forfeited shares	0	0
1.16	Proceeds from borrowings	0	0
1.17	Repayment of borrowings	0	0
1.18	Dividends paid	0	0
1.19	Other (share issue costs)	(140)	(198)
<b>Net financing cash flows</b>		628	4,802
<b>Net increase (decrease) in cash held</b>		(667)	904
1.20	Cash at beginning of quarter/year to date	4,112	2,490
1.21	Exchange rate adjustments to item 1.20	25	76
1.22	<b>Cash at end of quarter</b>	3,470	3,470

**Payments to directors of the entity, associates of the directors, related entities of the entity and associates of the related entities**

		Current quarter \$A'000
1.23	Aggregate amount of payments to the parties included in item 1.2	138
1.24	Aggregate amount of loans to the parties included in item 1.10	0

1.25 Explanation necessary for an understanding of the transactions

Director related payments relate to both Executive and Non-Executive Director fees.

**Non-cash financing and investing activities**

2.1 Details of financing and investing transactions which have had a material effect on consolidated assets and liabilities but did not involve cash flows

N/A

## Mining exploration entity and oil and gas exploration entity quarterly report

- 2.2 Details of outlays made by other entities to establish or increase their share in projects in which the reporting entity has an interest

N/A
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### Financing facilities available

Add notes as necessary for an understanding of the position.

	Amount available \$A'000	Amount used \$A'000
3.1 Loan facilities	0	0
3.2 Credit standby arrangements	0	0

### Estimated cash outflows for next quarter

	\$A'000
4.1 Exploration and evaluation	750
4.2 Development	0
4.3 Production	0
4.4 Administration	90
<b>Total</b>	<b>840</b>

### Reconciliation of cash

Reconciliation of cash at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts is as follows.

	Current quarter \$A'000	Previous quarter \$A'000
5.1 Cash on hand and at bank	3,470	4,115
5.2 Deposits at call	0	0
5.3 Bank overdraft	0	0
5.4 Other (Funds held within Trust Account)	0	0
<b>Total: cash at end of quarter (item 1.22)</b>	<b>3,470</b>	<b>4,115</b>

+ See chapter 19 for defined terms.

## Appendix 5B

### Mining exploration entity and oil and gas exploration entity quarterly report

#### Changes in interests in mining tenements and petroleum tenements

	Tenement reference and location	Nature of interest (note (2))	Interest at beginning of quarter	Interest at end of quarter
6.1	Interests in mining tenements and petroleum tenements relinquished, reduced or lapsed			Nil
6.2	Interests in mining tenements and petroleum tenements acquired or increased			

#### Issued and quoted securities at end of current quarter

Description includes rate of interest and any redemption or conversion rights together with prices and dates.

	Total number	Number quoted	Issue price per security (see note 3) (cents)	Amount paid up per security (see note 3) (cents)
7.1	Nil	Nil		
7.2	Nil	Nil		
7.3	277,304,699	277,304,699		
7.4	5,233,333 5,000,000 2,433	5,233,333 5,000,000 2,433	\$0.075 \$0.075 \$0.0475	\$392,500 \$375,000 \$2,433
7.5	Nil	Nil		

+ See chapter 19 for defined terms.

7.6	Changes during quarter (a) Increases through issues (b) Decreases through securities matured, converted	Nil	Nil		
7.7	<b>Options</b> (description and conversion factor)	<b>Listed Options</b>  GRKOB 35,000,000 5,145,000 10,058,444 18,158,214 2,616,662 2,500,000  <b>Total Listed</b> 73,478,320  <b>Unlisted Options</b> 100,000 375,000 3,300,003  <b>Total Unlisted</b> 3,775,003	35,000,000 5,145,000 10,058,444 18,158,214 2,616,662 2,500,000  Nil Nil Nil	<b>Exercise price</b>  5 cents 5 cents 0.075 cents 0.075 cents 0.075 cents 0.075 cents  0.16 cents 0.06 cents 0.20 cents	<b>Expiry date</b>  25 March 2017 25 March 2017 30 November 2018 30 November 2018 30 November 2018 30 November 2018  11 June 2016 28 November 2016 19 January 2018
7.8	Issued during quarter	<b>Listed Options</b> 5,116,662 <b>Unlisted Options</b>			
7.9	Exercised during quarter	<b>Listed Options</b> Nil  <b>Unlisted Options</b> Nil			
7.10	Expired during quarter	<b>Listed Options</b> Nil  <b>Unlisted Options</b> Nil			
7.11	<b>Debentures</b> (totals only)	Nil			
7.12	<b>Unsecured notes</b> (totals only)	Nil			

## Compliance statement

+ See chapter 19 for defined terms.

## Appendix 5B Mining exploration entity and oil and gas exploration entity quarterly report

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- 1 This statement has been prepared under accounting policies which comply with accounting standards as defined in the Corporations Act or other standards acceptable to ASX (see note 5).
- 2 This statement does /does not\* (*delete one*) give a true and fair view of the matters disclosed.

Sign here: ..... Date: 30 April 2016  
(Director/Company secretary)

Print name: **Mr Gabriel Chiappini**  
Director

### Notes

- 1 The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity wanting to disclose additional information is encouraged to do so, in a note or notes attached to this report.
- 2 The "Nature of interest" (items 6.1 and 6.2) includes options in respect of interests in mining tenements and petroleum tenements acquired, exercised or lapsed during the reporting period. If the entity is involved in a joint venture agreement and there are conditions precedent which will change its percentage interest in a mining tenement or petroleum tenement, it should disclose the change of percentage interest and conditions precedent in the list required for items 6.1 and 6.2.
- 3 **Issued and quoted securities** The issue price and amount paid up is not required in items 7.1 and 7.3 for fully paid securities.
- 4 The definitions in, and provisions of, *AASB 6: Exploration for and Evaluation of Mineral Resources* and *AASB 107: Statement of Cash Flows* apply to this report.
- 5 **Accounting Standards** ASX will accept, for example, the use of International Financial Reporting Standards for foreign entities. If the standards used do not address a topic, the Australian standard on that topic (if any) must be complied with.

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