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Black Rock Mining confirms 25% increase in Measured Mineral Resource, now the largest in class globally

HIGHLIGHTS

- **Completion of infill drill program and bulk metallurgical sampling has resulted in a 25% increase in Measured Mineral Resource**
- **Mahenge now has the largest Measured graphite mineral resource globally**
- **Black Rock confirms the first 10 years of the Ulanzi mine plan (including all of Module 1 and 2) is now underpinned by the highest confidence mineral resource category**
- **Mineral resource upgrade provides additional confidence for lenders and offtake partners in the context of the debt financing process currently underway**

Tanzanian graphite developer Black Rock Mining Limited (ASX:BKT) (**Black Rock** or the **Company**) is pleased to announce that as a result of completing assays from the 2019 infill metallurgical drilling and bulk sampling program the JORC Compliant Mineral Resource Estimate and Ore Reserve, has been updated, posting a 25% increase in Measured Mineral Resource.

Mahenge Graphite Mineral Resource Update

As part of the Company's ramp up on Project execution activities, Black Rock has completed an update of its Mahenge Mineral Resource designed to provide high confidence to customers and financiers on the planned production output over the first 10 years of operation from the Ulanzi open pit. The 25% increase in Measured Mineral Resource effectively confirms that 100% of the likely loan life is now underpinned by Measured Resource.

Drilling and bulk sampling was completed on the Ulanzi orebody in 2019 but held in storage for final customer qualification. This material was only recently assayed and used as an ore feed and processed in China and Canada as part of Black Rock's 500 tonne qualification processing plant campaign, refer ASX announcement 6th December 2021.

The complete report on the Mineral Resource Estimate is attached per Appendix 1.

Summary of the Mahenge Project JORC Mineral Resource update:

- The global Mineral Resource Estimate for the Mahenge Graphite Project is 213.1M tonnes at 7.8% TGC (Previously 211.9 Mt @ 7.8% TGC). This makes it the fourth largest JORC Mineral Resource globally and it is still open along strike;
- Mineral Resource in the Measured category is now 31.8Mt and Indicated at 84.6Mt, combined representing 55% of the total Mineral Resource;
- 25% increase in the measured Mineral Resource at Mahenge is the largest Measured Mineral Resource of any graphite developer globally;
- Within this Mineral Resource is a higher grade portion of 43.8Mt @ 10.8% TGC;

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- Project de-risking achieved by:
  - (i) Delivering the highest grade zones to date and further increasing mineral resource category quality;
  - (ii) Metallurgical test work indicates that 99% TGC concentrates can be processed through a relatively simple flotation process for a low energy, and low risk operation;
  - (iii) Test work supported by real world data through commercial scale processing of over 600 tonnes of graphite ore through three pilot plant and customer qualification programs; and
  - (iv) End-product validation. Independent testing by the Company's offtake partners confirmed that battery grade spherical graphite and high quality expandable graphite can be made from Mahenge concentrates for commercial sale.

Commenting on the Mineral Resource update, **Black Rock MD and CEO, John de Vries said:**

"As part of our ramp of activities associated with completing engineering design for Mahenge Module 1 we have completed assays on metallurgical drill core and bulk samples specifically taken to support final qualification of the project. Processing of these samples is an outcome of POSCO's equity investment of 15% of the Company.

It is pleasing to see that as a result of the increased confidence in Ulanzi, and an outcome of this campaign, Mahenge now has the largest Measured Mineral Resource of any graphite developer or operation globally. This directly translates to reduced investment risk for debt and equity investors, with the first 10 years of production (Ulanzi Module 1 and 2) now underpinned entirely by Measured Mineral Resource.

As part of the Investment Framework Agreement signed with the Government of Tanzania on the 13th of December 2021, the combined Mineral Resource and Ore Reserve of ML611/2019 (Ulanzi) and ML619/2019 (Cascades) will be merged into a single Special Mining Licence to be issued as part of the process. We look forward to working with Government of Tanzania in developing the world class Mahenge project"

Table 1 – Comparison between the eDFS July 2019 and February 2022 Updated JORC Compliant Mineral Resource Estimate and Ore Reserve

	eDFS July 2019			Update February 2022		
Category	**Tonnes (Mt)**	**Grade (%TGC)**	**Contained Graphite (Mt)**	**Tonnes (Mt)**	**Grade (%TGC)**	**Contained Graphite (Mt)**
Measured	**25.5**	8.6	2.2	**31.8**	8.6	2.7
Indicated	88.1	7.9	6.9	84.6	7.8	6.6
Inferred	98.3	7.6	7.4	96.7	7.4	7.2
TOTAL	**211.9**	**7.8**	**16.6**	**213.1**	**7.8**	**16.6**

ASX release was authorised on behalf of the Black Rock Board by: John de Vries, Managing Director & CEO

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About Black Rock

Black Rock Mining Limited is an Australian based company listed on the Australian Securities Exchange (ASX:BKT). The Company has a 100% interest in the Mahenge Graphite Project (**Project**) located in Tanzania. The Project has a JORC compliant Mineral Resource Estimate of 213m tonnes at 7.8% TGC. It also has Ore Reserves of 70.5m tonnes at 8.5% TGC. The Ore Reserves support a mine life of up to 340k tonnes of graphite per annum for a reserve life of 16 years. Since the release of the Mineral Resource Estimate, the Company confirms that it is not aware of any new information or data that materially affects the mineral resources estimate.

On 25 July 2019, the Company released an enhanced Definitive Feasibility Study (eDFS) for the Project. The eDFS for the Mahenge Graphite Mine envisages a four phase operation, ultimately producing 340,000 tpa of high-grade graphite, with exceptional financial metrics including:

- *Low Capex*: Lowest peak capital expenditure of US$116M for phase one*;
- *High Margin*: AISC margin of 63.1%;
- *Low Technical Risk*: Substantial pilot plant operations run of 110 tonnes; and
- *Superior Economics*: IRR of 44.8% with NPV_{10} of US$1.16bn (A$1.65bn**)

Black Rock has obtained all Environmental approvals, Mining Licences and its Resettlement Action Plan with clear title to the eDFS project area. An FCI Agreement was signed with the Government of Tanzania in December 2021.

In June 2020, the Company announced a Strategic Alliance with POSCO Group for the development of the Mahenge Graphite Mine. This included an equity investment of US$7.5M, signed in February 2021. In December 2021, a Term Sheet was agreed with POSCO for a US$10M prepay and life of mine fines offtake for Module 1. Black Rock has also allocated planned production through Pricing Framework Agreements (ASX release 8 May 2019) with five other offtake customers.

Following release of the enhanced DFS (eDFS) in July 2019, the Company confirms that it is not aware of any new data or information that materially affects the results of the eDFS and that all material assumptions and, in the case of estimates of Mineral Resources or Ore Reserves, technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed.

The estimated Ore Reserves and Mineral Resources underpinning the production target has been prepared by competent persons in accordance with the requirements in Appendix 5A (JORC Code).

The Company is construction-ready subject to financing.

JORC Compliant Mineral Resource Estimate and Ore Reserve***			
Ore Reserves	Tonnes (Mt)	Grade (% TGC)	Contained Graphite (Mt)
- Proven	-	-	-
- Probable	70.5	8.5	6.0
Total Ore Reserves	**70.5**	**8.5**	**6.0**
Mineral Resources			
- Measured	31.8	8.6	2.7
- Indicated	84.6	7.8	6.6
Total M&I	**116.4**	**8.0**	**9.3**
- Inferred	96.7	7.4	7.2
Total M, I&I	**213.1**	**7.8**	**16.6**

Location of Black Rock's Mahenge Graphite Project in Tanzania

For further information on Black Rock Mining Ltd, please visit **www.blackrockmining.com.au**

* Forecast Capex has been classified as a Class 3 estimate with accuracy of ±10% as defined by AACE
** AU$/US$ 0.70
*** Resource and Ore Reserve Estimates as released to ASX on 3 February 2022.

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The Mahenge Project JORC Mineral Resource

The Mineral Resource Estimate was completed by Trepanier Pty Ltd, an independent geological consultancy. The summary tables below display the Measured, Indicated and Inferred Mineral Resources for the combined Mahenge Project and individually by each prospect.

Table 1. Mahenge Global Mineral Resource summary table

Category	Tonnes (Millions)	TGC (%)	Contained TGC (Million tonnes)
Measured	31.8	8.6	2.7
Indicated	84.6	7.8	6.6
Inferred	96.7	7.4	7.2
TOTAL	**213.1**	**7.8**	**16.6**

Table 2. Mahenge Mineral Resource breakdown by prospect

Prospect	Category	Tonnes (Millions)	TGC (%)	Contained TGC (Million tonnes)
Ulanzi	Measured	19.6	8.8	1.7
	Indicated	46.2	8.2	3.8
	Inferred	48.7	7.8	3.8
	Sub-total	**114.5**	**8.1**	**9.3**
Cascades	Measured	12.1	8.3	1.0
	Indicated	20.8	8.3	1.7
	Inferred	27.3	7.9	2.2
	Sub-total	**60.2**	**8.1**	**4.9**
Epanko	Measured			
	Indicated	17.6	6.4	1.1
	Inferred	20.8	5.9	1.2
	Sub-total	**38.4**	**6.1**	**2.4**
COMBINED	**MEASURED**	**31.8**	**8.6**	**2.7**
	INDICATED	**84.6**	**7.8**	**6.6**
	INFERRED	**96.7**	**7.4**	**7.2**
	TOTAL	**213.1**	**7.8**	**16.6**

Note: Appropriate rounding applied

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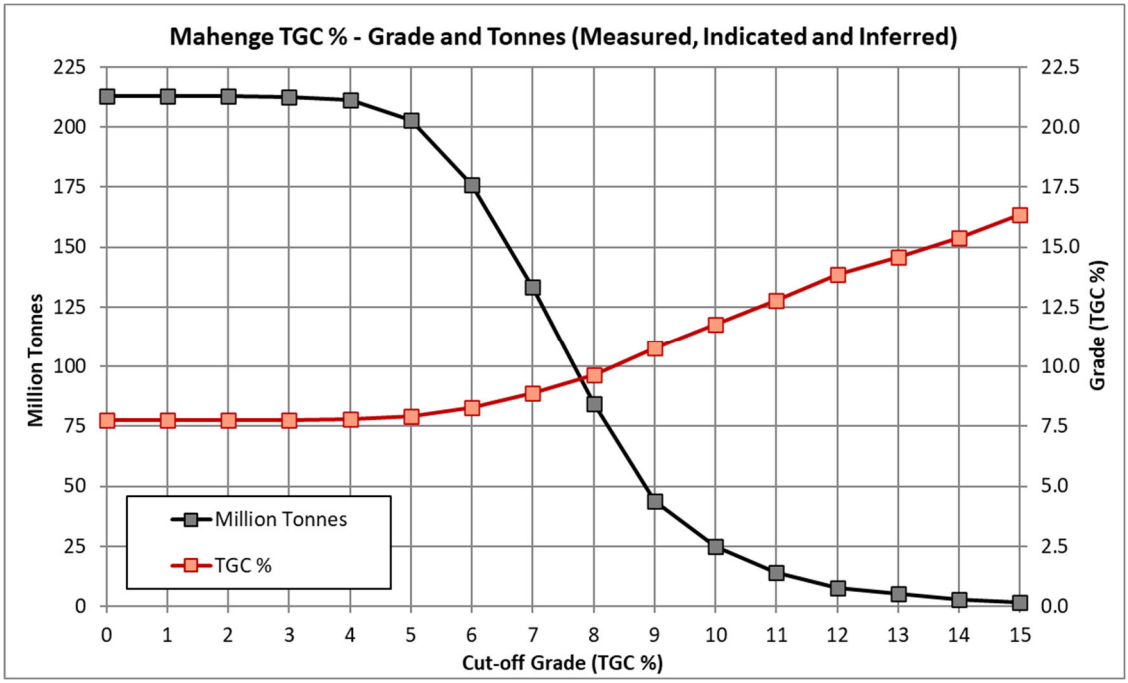
Mahenge Project global Mineral Resource Estimate breakdown by cut-off grades

Table 3 and Figure 1 below show 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 213.1Mt @ 7.8% TGC resource. At a 9% cut-off, a high-grade portion of 43.8Mt @ 10.8% TGC is available or at a 10% cut-off, a 24.9Mt portion of the Mineral Resource Estimate exists at 11.8% TGC.

Table 3. Mahenge Global Mineral Resource by grade cut-off

Cut-off TGC	Million tonnes	TGC (%)
0	213.1	7.8
1	213.1	7.8
2	213.0	7.8
3	212.7	7.8
4	211.4	7.8
5	202.9	7.9
6	176.1	8.3
7	133.5	8.9
8	84.3	9.7
9	43.8	10.8
10	24.9	11.8
11	14.3	12.8
12	7.8	13.9
13	5.2	14.6

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



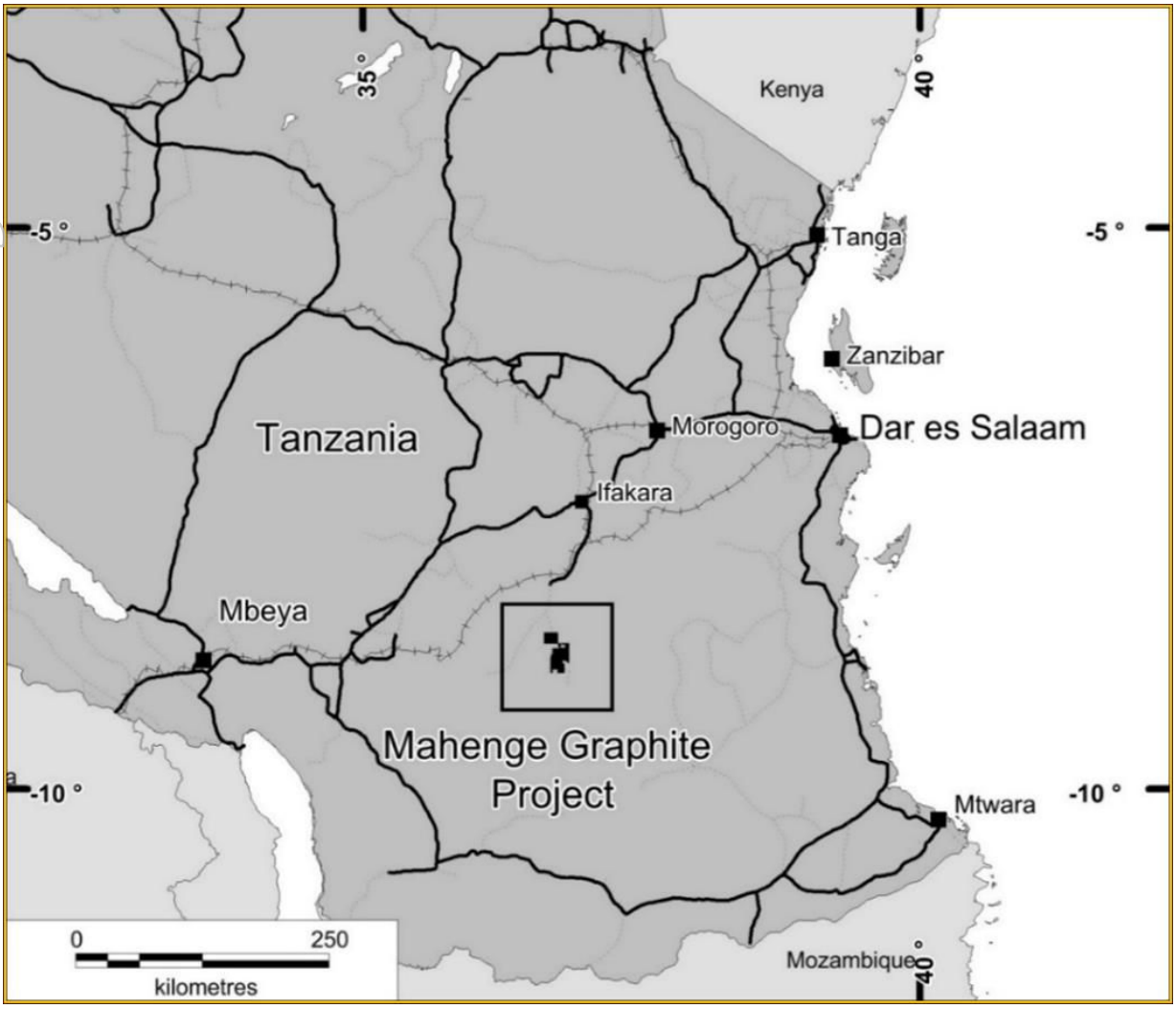


Figure 5. Mahenge Project location map

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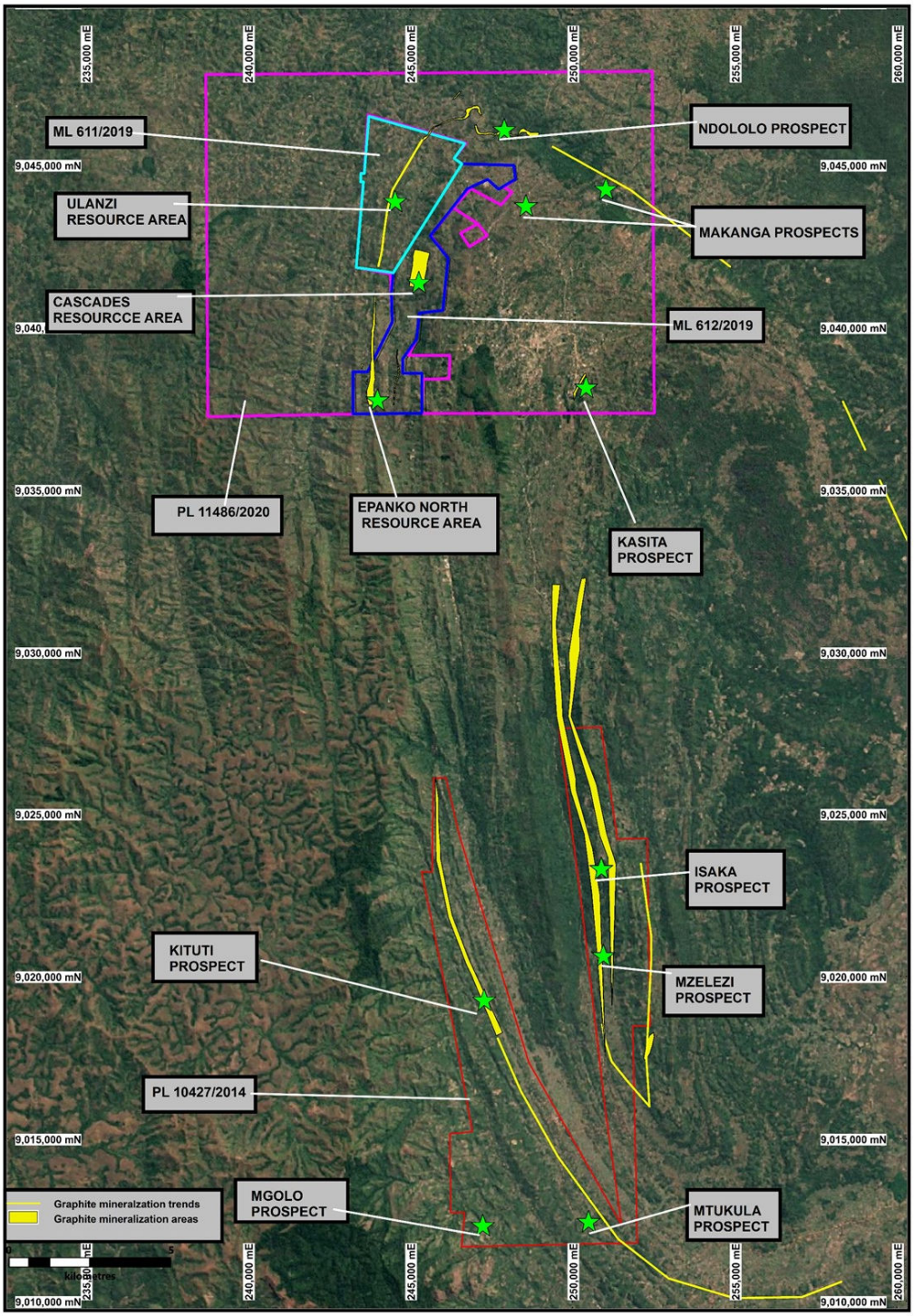

Figure 6. Tenement map.

The resource is contained entirely within PL 11486/2020 and two mining licenses covering the Epanko, Cascades and Ulanzi resource areas, the licences are ML 611/2019 and ML 612/2019.

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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) and Mr Prisin Moshi (Senior Geologist with Black Rock Mining Limited). Mr Barnes and Mr Moshi 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 Moshi is the co-Competent Person for the database and geological model, and completed the site inspections. Mr Barnes is the co-Competent Person for the database, geological model and resource estimate. Mr Barnes and Mr Moshi consent to the inclusion in this report of the matters based on their information in the form and context in which they appear.

Reserve

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

Mesrrs de Vries and Ko are both employees of Black Rock Mining and members of the Australasian Institute of Mining and Metallurgy. Mr de Vries holds options in the company as part of his total remuneration package. Mesrrs de Vries and Ko 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". Mesrrs de Vries and Ko consent to the inclusion in this report of the matters based on the information in the form and context in which they appear.

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SUMMARY OF RESOURCE ESTIMATE AND REPORTING CRITERIA

As per ASX Listing Rule 5.8 and the 2012 JORC reporting guidelines, a summary of the material information used to estimate the Mineral Resource is detailed below (for more detail please refer to Table 1, Sections 1 to 3 included below in Appendix 2).

Geology and geological interpretation

The Mahenge Mineral Resource is hosted within the rocks of the Proterozoic Mozambique Orogenic Belt that extends along the eastern border of Africa from Ethiopia, Kenya and Tanzania. It consists of high-grade mid-crustal rocks with a Neoproterozoic metamorphic overprint. The Mozambique Belt is divided into the Western Granulite and Eastern Granulite where Mahenge is situated. The Granulites are separated by flat-lying thrust zones and younger sedimentary basins of the Karoo.

The belt has undergone granulite phase metamorphism that has been subsequently retrograded to upper amphibolite facies. Structurally the Mahenge region has undergone intense deformation forming a tight poly-phase sequence of marble, mafic and felsic gneiss and graphitic schists as part of the kilometre scale Mahenge synform. The Mineral Resources are located on the western flank of the synform where the bedding and foliation dips towards the east between 60 and 80˚. The units typically strike to the north and rotate to the northeast as they wrap around the fold nose.

The geological interpretation used in this Mineral Resource estimate has been based on mapping of surface outcrop, multiple pits and trenches in conjunction with reverse circulation (RC) and diamond core (DD) drilling. The 3D geological wireframes were created using well defined footwall and hanging wall boundaries based primarily on changes from graphite dominated gneiss to mica or garnet gneissic units, which as expected also reflected a decrease in graphite grade. The geological wireframes were extended along strike and between areas of drilling approximately half the distance between drill sections.

Drilling techniques and hole spacing

The Mahenge estimation has been based on a combination of drilling and surface trench and pit sampling with the majority of the sample and geological data from RC (6inch) and DD drilling (PQ and HQ). The Company has used 100m x 100m, 100m x 50m and 50m x 50m grid drill spacing with some selected further infill, which has been sufficient to clearly show geological and grade continuity. The drilling has been oriented perpendicular to the mineralisation or as close to perpendicular as possible subject to drill access. The drill collars have been surveyed using a high accuracy differential global position (DGPS) measurements for the X, Y and Z co-ordinates and the Z component has been checked by draping the collar position over a high quality digital terrain model and photographic imagery flown for the Company. There is a high degree of confidence in the locations of the collars and trenches based on DGPS pick-ups and the high definition topographic and photographic survey.

Sampling and sub-sampling techniques

Trenches were sampled using 2m composites with samples taken from in-situ oxide, transition or fresh rock as a continuous chip channel sample across the trench wall. Pit samples were taken as individual point samples at the base of the pit. The surface samples weighed between 2.5 and 3.5kg. A high degree of care was taken to ensure no transported material was sampled from the trenches or pits. There was no sub-sampling from the pits or trenches.

At the drill rig the RC samples were split using a 3-tier riffle splitter to 1m intervals then composited as two x 1m samples with a combined weight of approximately 3.0kg. Samples in excess of 3kg were riffle split to

reduce the weight to approximately 3kg. The calico samples bags were uniquely numbered and recorded prior to bagging in polyweave bags.

After geological and geotechnical logging of the pre-2017 diamond drilling, the HQ diamond core was half cored and then quarter cored; the PQ diamond core was slivered. The quarter core or sliver was composited to 2m intervals which were placed into uniquely numbered calico bags and then bagged into polyweaves. All of the polyweave bags were secured with a numbered plastic security tag prior to submission to the laboratory. There were no sub-sampling techniques past the sample dispatch from Mahenge.

For the 2017/18 diamond drilling, whole core samples were packaged as 2m composite samples on site and then transported in drums from Tanzania to Canada to SGS Lakefield.

Sample analysis method

The trench, RC and diamond core samples were sent to Mwanza in Tanzania for preparation and the pulps were then sent to Brisbane for carbon analysis using Total Graphitic Carbon (TGC) C-IR18 LECO Total Carbon. Graphitic C is determined by digesting sample in 50% HCl to evolve carbonate as CO2. Residue is filtered, washed, dried and then roasted at 425C. The roasted residue is analysed for carbon by high temperature Leco furnace with infrared detection. Method precision is ± 15% with a reporting limit of 0.02 to 100%

All TGC analysis has been carried out by a certified laboratory – ALS Global. TGC is the most appropriate method to analyse for graphitic carbon and it is a total analysis. ALSC Global inserted its own standards and blanks and completed its own QAQC for each batch of samples. No failures were reported. Black Rock Mining has employed its own QA/QC strategy that involved field duplicates, blanks, insertion of certified reference material and check analysis using a secondary laboratory. The Company is satisfied that TGC results are accurate and precise and no systematic bias has been introduced. Deleterious element analysis was also conducted using a multi-element ICP method.

The more recent drill core samples were assayed at SGS Lakefield (Ontario, Canada) and SGS Burnaby (Vancouver, BC, Canada). Sample preparation at the SGS laboratory includes stage crushing the 2m intervals to -20mm and splitting out 2/3 kg for the geochemical analyses and the remainder retained for metallurgical testwork. The 2-3kg split samples were then dried, crushed to 75% passing 2mm, split, and then pulverised to 85% passing 75 microns. The sample pulps were then analysed at SGS Lakefield for carbon analysis (Total Graphitic Carbon - TGC) using method GE CSA05V. Pulps were subsequently sent to SGS Burnaby for multielement analysis using method GE_ICP21B20 which is a 51 element package utilising an Aqua Regia digest, ICP-AES/MS.

Cut-off grades

Grade envelopes have been wireframed to an approximate 4 to 5% TGC cut-off allowing for continuity of the mineralised zones. Based on visual and statistical analysis of the drilling results and geological logging of the graphite rich zones, this cut-off tends to be a natural geological change and coincides with the contact between the graphite rich gneiss and the other adjacent country rocks (i.e. garnet gneisses and occasional marbles). Distinctly higher grade internal veins at Cascade were modelled at approximately a 9 to 10% allowing for continuity.

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Estimation Methodology

Drilling, surface test pit, trench sampling and geological mapping data was utilised to control the interpretation of the mineralised zones. Three broader domains with two higher grade internal veins in a main domain were wireframed using Leapfrog™ software's vein modelling tools with contacts determined by coincident geology (graphitic gneiss) and a significant increase in TGC grade (> 4-5% TGC).

Grade estimation was by Ordinary Kriging ("OK") for Total Graphitic Carbon (TGC %) using GEOVIA Surpac™ software into the domains. The estimate was resolved into 10m (E) x 25m (N) x 10m (RL) parent cells that had been sub-celled at the domain boundaries for accurate domain volume representation. Estimation parameters were based on the variogram models, data geometry and kriging estimation statistics. Potential top-cuts were evaluated by completing an outlier analysis using a combination of methods including grade histograms, log probability plots and other statistical tools. Based on this statistical analysis of the data population, no top-cuts were required.

Classification criteria

The Mineral Resource has been classified on the basis of confidence in the geological model, continuity of mineralised zones, drilling density, available mapping, pit sampling and trenching data, confidence in the underlying database and the available bulk density information. The Mahenge Mineral Resource in part has been classified as Measured and Indicated with the remainder as Inferred according to JORC 2012.

Minimum drill spacing for Measured Resources is up to 50m (northing) by up to 50m (easting), for Indicated Resources is 50-100m (northing) by 50-75m (easting) with larger drill spacing zones categorized as Inferred Resources.

Mining and metallurgical methods and parameters

The Mineral Resources at Mahenge is amendable to conventional open pit mining with low strip ratios and conventional crush, grind and flotation processing to produce a potential saleable graphite concentrate.

Metallurgical sample composites were prepared at Bureau Veritas Minerals laboratory in Perth from half cut diamond drill core from the DD drilling programmes. The representative composite samples comprise: Epanko North fresh, Epanko oxide, Ulanzi fresh and Ulanzi oxide materials. The ore composites were generated to assess the ore's amenability to beneficiation by froth flotation and also to identify the nature, flake size and occurrence of the graphite in a selection of drill core samples and flotation products. Cascades oxide and primary mineralisation has been tested with similar results to that of Ulanzi mineralisation.

A 120t bulk sample of Ulanzi and Cascades oxide and primary mineralisation was delivered to SGS metallurgical testing facility in Canada for bulk flotation and pilot scale processing. This programme was completed in April 2018 and has successfully delivered an optimised processing flowsheet for equipment selection undertaken by CPC Engineering Perth as part of the DFS.

An 1,800m metallurgical drill program was conducted from December 2017 to January 2018. The core was quarter cut with the remining 30 tonnes of core shipped to SGS Canada for metallurgical test work. A variability metallurgical program was completed on 17 Oxide bulk surface samples and 14 variability domain samples collected.

The variability composites included Oxide, Transition, and Fresh mineralization. The oxide bulk samples were representative splits from the larger the 500t pilot plant bulk sample that was stored at the SGS

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Lakefield site. The program confirmed the flowsheet and flotation conditions that were established in previous laboratory and pilot plant programs that were generated from earlier drilling programs and confirmed engineering data for comminution and dewatering.

- Metallurgical test work on the oxide and primary mineralisation at Ulanzi and Epanko north has consistently returned up to 99% TGC concentrates.
- High purity and coarse flake concentrate made from a straightforward flotation process using oxide, transition and fresh drill core and bulk samples.
- Laboratory based metallurgical performance of recovery, concentrate grade and flake distribution supported by processing of 600t through three pilot plant programs .
- Independent expandable graphite testing indicates that Mahenge concentrates are highly suitable for this application with superior expansion ratios to current Chinese expandable graphite on the market
- Independent spherical graphite test work indicates that Mahenge concentrates can meet/exceed battery grade graphite specifications with conventional processing and purification methods. Acid purification of spherical graphite has returned up to 99.98% TGC and thermal purification has returned > 99.999% assays.
- Extended battery cycling over 300 cycles indicates that Mahenge concentrates are highly suitable as a Lithium Ion Battery (LiB) anode material

The Company believes that the combination of large tonnage, high graphite grades, potential low cost mining and conventional processing, the Mahenge Project could produce a saleable graphite concentrate and shows good potential for economic development.

Summary

- The global Mineral Resource Estimate for the Mahenge Graphite Project is 213.1M tonnes at 7.8% TGC. This makes it the fourth largest JORC Resource globally and it is still open along strike.
- Mineral Resources in the Measured category are now 31.8Mt and Indicated at 84.6Mt combined representing 55% of the total Mineral Resource.
- Within this Mineral Resource is a higher grade portion of 43.8Mt @ 10.8%TGC,
- Project de-risking achieved by:
    - Delivering the highest grade zones to date and further increasing resource category quality.
    - Metallurgical test work indicates that 99% TGC concentrates can be processed through a relatively simple flotation process. Low Risk
    - End-product validation. Independent testing by the Company's offtake partners confirmed that battery grade spherical graphite and high quality expandable graphite can be made from Mahenge concentrates.

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Appendix 1: New Downhole Drill intercepts for Ulanzi Mineral Resource

Hole ID	Hole	Easting	Northing	RL	Hole Depth	Dip	Azimuth	Domain	From (m)	To (m)	Interval	TGC %
DD33	DDH	244506.5	9044098.6	740.8	55	-90	360	5	0	55.0	55.0	9.6
DD34	DDH	244490.3	9043903.2	718.3	60	-90	360	4	0	60.0	60.0	7.6
DD35	DDH	244452.6	9043799.7	716.4	100.5	-90	360	4	0	98.0	98.0	8.3
DD36	DDH	244440.2	9043709.8	713.7	60	-90	360	4	0	60.0	60.0	11.2
DD37	DDH	244496.0	9043798.8	704.5	80.56	-90	360	4	0	80.6	80.6	11.8
DD38	DDH	244526.1	9043899.1	705.1	65.03	-90	360	4	0	65.0	65.0	9.7
DD39	DDH	244553.3	9044097.8	721.0	74.64	-90	360	5	0	74.6	74.6	7.6
DD40	DDH	244512.4	9043496.9	653.5	79.1	-60	360	3	0	48.0	48.0	8.2
DD41	DDH	244474.0	9043495.7	669.6	50	-60	360	3	0	50.0	50.0	9.1
DD42	DDH	244522.5	9043450.0	661.9	61.3	-90	360	3	12	61.3	49.3	13.2
DD43	DDH	244477.1	9043447.6	681.5	91.1	-90	360	3	0	91.1	91.1	9.7
DD44	DDH	244436.6	9043454.2	699.0	82	-90	360	3	0	58.0	58.0	10.7
DD45	DDH	244469.3	9043400.7	680.2	100	-90	360	3	0	100.0	100.0	9.6
DD46	DDH	244460.5	9043349.8	671.3	80.1	-60	270	3	0	72.0	72.0	9.5
DD47	DDH	244389.5	9043351.6	710.9	75	-90	360	3	0	50.0	50.0	4.4
DD48	DDH	244406.7	9043297.1	696.6	76	-90	360	3	0	70.0	70.0	9.8
DD49	DDH	244410.8	9043181.8	660.0	53.7	-60	270	3	0	44.0	44.0	8.4
DD49B	DDH	244408.7	9043180.4	659.7	34	-90	360	3	0	34.0	34.0	6.8
DD50	DDH	244402.8	9043123.4	636.2	50	-90	360	3	0	50.0	50.0	9.1
DD51	DDH	244414.2	9043038.9	605.1	75	-60	270	3	0	75.0	75.0	8.5
DD52	DDH	244405.8	9043006.6	600.5	109.7	-90	270	3	0	109.7	109.7	11.1
DD53	DDH	244389.6	9043008.8	602.1	64.1	-60	270	3	0	54.0	54.0	7.6
DD54	DDH	244389.6	9042851.5	586.5	64	-70	270	2	0	64.0	64.0	7.8
DD55	DDH	244330.4	9042801.5	613.2	48.4	-60	270	2	0	40.0	40.0	8.9
DD56	DDH	244361.4	9042741.5	620.6	90.4	-60	270	2	0	90.4	90.4	8.4
DD57	DDH	244235.8	9042652.3	686.0	39.2	-70	270	2	0	39.2	39.2	9.0

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Appendix 2. JORC Code, 2012 Edition Table 1.

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.*	• *The Company has taken all care to ensure no material containing additional carbon has contaminated the samples.* • *The trenches were sampled using 2m composites with samples taken from in situ oxide, transition or fresh rock as a continuous chip channel across the trench walls or along a clean exposed trench floor* • *The pit samples were taken as individual point samples at the base of the pit.* • *All samples are individually labelled and logged.* • *Diamond drill sampling consisted of quarter core sampling of HQ diamond core or a sliver (~1/5th) of PQ diamond core, on a 2m sample interval.* • *RC samples were riffle split on an individual 1m interval then composited as two x 1m samples which were submitted to the laboratory.* • *The company maintains a secure storage area for all samples and core held on site.*
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• *Both diamond core (HQ and PQ single tube) and reverse circulation (6" face sampling) drilling methods have been used. All core is oriented using a spear or ACT back-end orientation device.*

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Criteria	JORC Code explanation	Commentary
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• *Diamond drill sample recoveries have been measured for all holes and found to be acceptable. Method was linear metre core recovery for every metre drilled.* • *RC recoveries were estimated by measuring the weight of every 1m interval. Grade /recovery correlation was found to be acceptable.* • *Twin hole comparison of RC vs Diamond indicates that no sample bias has occurred for graphite.*
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• *Pits and trenches were logged for geology and structures, and photographs were also recorded for the trench samples.* • *All drill holes have been comprehensively logged for lithology, mineralisation, recoveries, orientation, structure and RQD (core). All drill holes have been photographed. Sawn diamond core has been retained for a record in core trays. RC chips stored in both chip trays and 1-3kg individual metre samples as a record.*

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Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• *The pit and trench samples were not sub sampled.* • *For the pre-2017 diamond drilling, HQ diamond core samples were halved with one half then quartered. A quarter core sample was taken for laboratory analysis. The remaining quarter core sample is retained for a record and a half core sample retained for metallurgical test work. PQ diamond core was slivered with a core saw and the sliver (~20%) taken for laboratory analysis. The remaining core was retained for metallurgical test work and for a record.* • *For the 2017/18 diamond drilling, whole core samples were packaged as 2m composite samples on site and then transported in drums from Tanzania to Canada to SGS Lakefield.* • *RC samples were collected for every down-hole metre in a separate RC bag. Each metre sample was split through a three-tier riffle splitter and a 1.5kg sample taken of each metre. Two one-metre samples, totalling 3kg in weight were composited for assay submission. Field duplicates were taken to test precision up to the compositing and splitting stage.* • *Sample sizes for all medium (i.e. trenches, pits, DD and RC drilling) were appropriate for this style of graphite mineralisation.*

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Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	• *The majority of samples were sent to Mwanza in Tanzania for preparation and pulps were then sent to Brisbane for carbon analysis: Total Graphitic Carbon (TGC) C-IR18 LECO Total Carbon.* • *Graphitic C is determined by digesting sample in 50% HCl to evolve carbonate as CO_2. Residue is filtered, washed, dried and then roasted at 425°C. The roasted residue is analysed for carbon by high temperature Leco furnace with infra-red detection. Method Precision: ± 15%. Reporting Limit:0.02 – 100 %.* • *Some of the samples were analysed for Multi-elements using ME-ICP81 sodium peroxide fusion and dissolution with elements determined by ICP.* • *Some of the samples were analysed for Multi-elements using ME-MS61 for 48 elements using a HF-HNO3-HClO4 acid digestion, HCl leach followed by ICP-AES and ICP-MS analysis.* • *Some of the samples were analysed for Multi-elements using ME-MS81 using lithium borate fusion and ICP-MS determination for 38 elements.* • *All analysis prior to 2021 has been carried out by certified laboratory – ALS Global. TGC is the most appropriate method to analyse for graphitic carbon and it is a total analysis. ALS Global inserted its own standards and blanks and completed its own QAQC for each batch of samples. No failures were noted.* • *In 2021, drill core samples were assayed at SGS Lakefield (Ontario, Canada) and SGS Burnaby (Vancouver, BC, Canada)* • *Sample preparation at the SGS laboratory includes drying, crushing to 75% passing 2mm, splitting, and then pulverising to 85% passing 75 microns. The sample pulps were then analysed at SGS Lakefield for carbon analysis (Total Graphitic Carbon - TGC) using method GE CSA05V. Pulps were subsequently sent to SGS Burnaby for multielement analysis using method GE_ICP21B20 which is a 51 element package utilising an Aqua Regia digest, ICP-AES/MS.*

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Criteria	JORC Code explanation	Commentary
		• *BKT inserted certified standard material, a blank or a duplicate at a rate of one in twenty samples.* • *Approximately 1/40 sample pulps from the 2015 drilling were re-submitted from the primary Laboratory (ALS Global) to a secondary Laboratory (SGS) in Johannesburg, South Africa. No bias or issues with accuracy or precision were observed between the two data sets.* • *Based on the QA/QC strategy employed by BKT for the duration of the exploration programs at Mahenge BKT is satisfied the TGC results are accurate and precise and no systematic bias has been introduced.*

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Criteria	JORC Code explanation	Commentary
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• *The data has been manually updated into a master spreadsheet and a GIS database, considered to be appropriate for this exploration program.* • *Samples and assays were also imported to a SQL drilling database, and were subject to validation on import.* • *Drill intersections have been checked by a consultant geologist as part of the data validation process and errors corrected prior to resource estimation.* • *Twin holes were used to compare diamond vs RC drilling. Correlation of results was excellent.* • *There has been no adjustment of assay data.*
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• *A handheld GPS was used to identify the positions of the pits in the field.* • *The handheld GPS has an accuracy of +/- 5m.* • *The datum used is: WGS84, zone 37 south.* • *Drill collars have been surveyed with a DGPS for sub-metre accuracy for the X, Y and Z components and the Ulanzi, Cascade and Epanko North prospects have been surveyed with a high resolution aerial drone to generate an accurate contour map and high resolution photo image. The Z component has also been checked by draping the collar position over a high quality digital terrain model and comparing to the DGPS Z reading.* • *The locations and RLs of the trenches have been checked using the detailed aerial/topo survey and modified accordingly for both x/y and z components.* • *BKT is satisfied the location of trenches, pits and drill holes have been located with a high degree of accuracy.*

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Criteria	JORC Code explanation	Commentary
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• *Data spacing and distribution is considered to be appropriate for the estimation of a Mineral Resource.* • *The company has used 100 x 100m or 100 x 50m or 50 x 50m grid spacing, with some selected infill, which has been sufficient to show geological and grade continuity.* • *The drill spacing is appropriate for Resource Estimation.* • *No further sample compositing has been applied post the sub-sampling stage.*
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• *Drilling is oriented perpendicular to mineralisation or as close to perpendicular to mineralisation as possible.* • *The orientation of the drill direction has not introduced a sample bias.*

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Criteria	JORC Code explanation	Commentary
Sample security	• *The measures taken to ensure sample security.*	• *The samples were taken under the supervision of an experienced geologist employed as a consultant to BKT.* • *The samples were transferred under BKT supervision from site to the local town of Mahenge where the samples were then transported from Mahenge to Dar es Salaam, and then transported to Mwanza where they were inspected and then delivered directly to the ALS Global process facility.* • *Chain of custody protocols were observed to ensure the samples were not tampered with post-sampling and until delivery to the laboratory for preparation and analysis.* • *Tamper proof plastic security tags were fastened to the samples bags. No evidence of sample tampering was reported by the receiving laboratory.* • *Transport of the pulps from Tanzania to Australia was under the supervision of ALS Global.* • *For the recent diamond core drilling for use for metallurgical testwork, samples were couriered via international courier company from Tanzania to SG Lakefield in drums.*
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• *Trenching and drilling information collected by BKT has been evaluated for sampling techniques, appropriateness of methods and data accuracy by an external geological consultant.*

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Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• *The sampling was undertaken on granted license PL 11486/2020.* • *It has an area of 118.37km^2.* • *The license is 100% owned by BKT.* • *Landowners of nearby villages are supportive of the sampling and exploration program.*
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• *Previous explorers completed some limited RC drilling and rockchip sampling but the original data has not been located apart from what has been announced via ASX releases by Kibaran Resources during 2011 and 2013.*
Geology	• *Deposit type, geological setting and style of mineralisation.*	• *The deposit type is described as schist hosted flaky graphite.* • *The mineralisation is hosted within upper amphibolite facies gneiss of the Mozambique Mobile Belt.* • *Over 95% of the exposures within the tenement comprise 3 main rock types that include alternating sequences of:* • *Graphitic schist – feldspar and quartz rich varieties.* • *Marble and,* • *Biotite and hornblende granulites.* • *Less common rock types include quartzite.*

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
		• *A summary of all material drill intervals is provided in Appendix 1.*

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Criteria	JORC Code explanation	Commentary
	○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• *Exploration results have been reported as weighted averages allowing up to 2m of internal waste and minimum grades at 5% TGC.* • *No maximum or top- cutting was applied during the calculation of drill holes intersects.* • *Drill intervals are provided in Appendix 1.*
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').*	• *Drill hole results are reported as down-hole metres.* • *Sufficient drilling, mapping and trenching has been completed at the main prospects to understand the orientation of mineralised lodes. A range of drill holes angles were used during the exploration program with the majority drilled at -60˚ (refer to Appendix 1).*
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• *Figures show plan location of drill holes, appropriately scaled and referenced.* • *Refer to images in the main body of the text*

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Criteria	JORC Code explanation	Commentary
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• *All drill holes have been reported in their entirety.* • *All drilling results have been reported in past Exploration announcements.*
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• *1 in 10 samples from the first drill programme were assayed for deleterious elements using a 40 element ICP method. No deleterious elements were observed, with background (low) levels of uranium and thorium.* • *1,078 bulk density measurements using the water displacement method from the oxide (limited) transitional and fresh zones.* • *The samples for the bulk density measurements were taken from diamond drill core.* • *Every diamond hole drilled used in this Resource Estimate has had intervals tested for bulk density generating a high quality dataset.*
Further work	• *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• *Ongoing metallurgical test work – flotation and particle size optimization.* • *Additional bulk density test work is planned, particularly focused on the oxide and transition material.*

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Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• *The drillhole database was compiled by BKT as Excel spreadsheets.* • *Maps, lithology, drill holes, trenches and test pit samples were also supplied for use in GIS format (MapInfo/Discover) and Excel spreadsheets.* • *The data have then been imported into a relational SQL Server database using DataShed™ (industry standard drillhole database management software).* • *The data are constantly audited and any discrepancies checked by BKT personnel before being updated in the database.* • *Normal data validation checks were completed on import to the SQL database and when viewing in Surpac and Leapfrog.*
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• *Prisin Moshi, Competent Person, is based on site and domiciled at the local Mahenge village and has supervised all onsite field work.*
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• *The confidence in the geological interpretation is considered robust for the purposes of reporting Measured, Indicated and Inferred Resources. Graphite is hosted within graphitic gneisses of the Mahenge Scarp. These graphite rich zones generally strike N-S and dip to the east at 60-80° and are interpreted to originate from graphitic sedimentary units of the Mahenge Scarp.* • *The geological interpretation is supported by geological mapping and drill hole logging and mineralogical studies completed on drill programmes.*

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		• *Weathered zones (oxide and transition) were interpreted based on the geological logs and coded into the block model.* • *No alternative interpretations have been considered at this stage.* • *The graphitic gneiss units are known to be continuous in strike length for up to 22km.*
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• *The modelled mineralized zone for Ulanzi has dimensions of 2,500m (surface trace striking 020°) with four zones averaging in thickness of between 50-60m and ranging between 400m and 760m RL (AMSL).* • *The modelled mineralized zone for Epanko has dimensions of 1,025m (surface trace striking 000°) averaging in thickness of between 55-80m and ranging between 640m and 1,025m RL (AMSL).* • *The modelled mineralized zone for Cascade has dimensions of 900m (surface trace striking 020°) averaging in thickness 70m and ranging between 560m and 900m RL (AMSL).*
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.*	• *Grade estimation using Ordinary Kriging (OK) was completed using Geovia Surpac™ software for TGC (%).* • *Drill spacing typically ranges from 50m to 100m.* • *Drillhole samples were flagged with wireframed domain codes. Sample data was composited for TGC to 2m using a best fit method with a minimum of 50% of the required interval to make a composite. These were combined with 2m spaced trench samples plus individual 50m by 50m spaced base of test pit assays.* • *Potential influences of extreme sample distribution outliers were investigated to determine whether they needed to be reduced by top-cutting on a domain basis. The investigation used a combination of methods including grade histograms, log probability plots and statistical tools. Based on this, it was*

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• *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	*determined that some top cuts were required. The four Ulanzi domains were top-cut between 16.0% and 17.6% TGC. No top-cuts were required at Cascade.* • *Directional variograms were modelled by domain using traditional variograms. Nugget values for TGC are low to moderate (around 15 to 30%) and structure ranges up to 270m.* • *Block model was constructed with parent blocks of 10m (E) by 25m (N) by 10m (RL) and sub-blocked to 5m (E) by 12.5m (N) by 5m (RL). All estimation was completed to the parent cell size. Discretisation was set to 5 by 5 by 2 for all domains.*
	• *Three estimation passes were used with differing distances at Epanko vs. Ulanzi and Cascade. This was done due to a tighter drill spacing at Epanko and Cascade. At Ulanzi the first pass had a limit of 150m, the second pass 300m and the third pass searching a large distance to fill the blocks within the wireframed zones. At Epanko and Cascade, the first pass had a limit of 75m, the second pass 150m and the third pass searching a large distance to fill the blocks within the wireframed zones. Each pass used a maximum of 24 samples, a minimum of 8 samples and maximum per hole of 5 samples.* • *Search ellipse sizes were based primarily on a combination of the variography and the trends of the wireframed mineralized zones. Hard boundaries were applied between all estimation domains.* • *Validation of the block model included a volumetric comparison of the resource wireframes to the block model volumes. Validation of the grade estimate included comparison of block model grades to the declustered input composite grades plus swath plot comparison by easting, northing and elevation. Visual comparisons of input composite grades vs. block model grades were also completed.*

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Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• *Tonnes are estimated on a dry basis.*
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• *Grade envelopes have been wireframed to an approximate 4 to 5% TGC cut-off allowing for continuity of the mineralised zones. Based on visual and statistical analysis of the drilling results and geological logging of the graphite rich zones, this cut-off tends to be a natural geological change and coincides with the contact between the graphite rich gneiss and the other adjacent country rocks (i.e. garnet gneisses and occasional marbles).*
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• *As graphite mineralisation is consistent along strike, has consistent widths and outcrops on steep ridges or ridge slopes (indicating low strip ratios), open pit mining methods have been adopted.*
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	• *The Pre-Feasibility Study included a suite of comprehensive metallurgical test work programmes conducted by Bureau Veritas of Perth. Rock types sampled consist of oxide and primary mineralisation at Epanko North and Ulanzi plus oxide mineralisation at Cascades. Cascades primary mineralisation is being tested. These samples (taken as surface outcrop and diamond core) are considered to be representative of the mineralised zones.* • *A pilot plant consisting of 50 tonnes of Cascades and 40 tonnes of Ulanzi was conducted at SGS Lakefield Laboratory, Ontario Canada in April 2018. Ore types consisted of a mix of fresh drill core and surface sampled oxides from Ulanzi and Cascades. An extensive metallurgical test work program has been conducted*

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		as part of Definitive Feasibility Study, extending the work previously conducted in the PFS. The DFS program supported recovery and flake size estimates developed in PFS including grind and polishing performance. • *A variability metallurgical program was completed on 17 Oxide bulk surface samples and 14 variability domain representative samples of the first 10 years of the mine plan where selected from the 1,800m metallurgical drill program. The fourteen domain composites were generated by combining a predetermined mass from several 2m drill core intervals to form Oxide, Transition, and Fresh composites. The variability composites included Oxide, Transition, and Fresh mineralisation. The oxide bulk samples were representative splits from the larger the 500t pilot plant bulk sample that was stored at the SGS Lakefield site. The flowsheet and conditions were confirmed in the metallurgical program and most composites produced graphite concentrates well above the 95% TGC grade target.* • *A 500t bulk samples obtained in early 2018 as part of a metallurgical drill program and representing the first 10 years of mining at Ulanzi, was sent through a 500t large scale processing plant campaign in Shandong, China for customer qualification works. The campaign was completed successfully in December 2021.*
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• *Environmental licence EC/EIA/2018/0352 has been granted for all PL's in the Mahenge project area on 29 August 2018. No conditions are attached to the licences.*

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Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• *The Company has completed specific gravity test work on 1,078 drill core samples across the Mahenge Project using Hydrostatic Weighing (uncoated).* • *For the July 2017 resource, of these 1,078 samples, 587 are from within the modelled mineralised domains, primarily from fresh material (556 samples) and transition (37 samples).* • *Statistical analysis of the samples and comparison against depth and TGC grade identified a subjective relationship between bulk density (BD) and TGC grade. As such, the BD used for fresh material was the average for the deposits (90% confidence interval) at 2.73 g/cm3 and 2.74 g/cm3 at Cascade (with a standard deviation of 0.05).* • *For the modelled oxide/transition zone, there were only 37 samples available. Whilst the analysis of these samples produced the same BD as the fresh material, it was decided to use a slightly reduced BD of 2.6 g/cm3 at Ulanzi and 2.5 g/cm3 at Cascade. It is planned to increase the number of measurements on transition material samples in the next phase of work.* • *For the modelled oxide zone, there were 2 BD measurements completed to date. It is planned to complete a representative number of measurements on oxide material samples in the next phase of work using appropriate measuring techniques for the material type. For this resource, an oxide BD of 1.9 g/cm3 has been assumed.* • *For this update to Ulanzi only, of the 230 samples from within the modelled mineralised domains, the vast majority are from fresh material (182 samples) and only a limited number from the oxide/transition zones (48 samples) including 21 from completely to highly weathered and 27 from moderately to slightly weathered. Revised averages for these zones are 2.0 g/cm3 for strongly oxidised, 2.5 g/cm3 for transition and 2.71 g/cm3 for fresh.*

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Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• *The Mineral Resource has been classified on the basis of confidence in the geological model, continuity of mineralised zones, drilling density, confidence in the underlying database and the available bulk density information. Maximum drill spacing for Measured Resource classification is 50m (northing) by 50m (easting) with some selected infill. Indicated Resource classification is 100m (northing) by 50-75m (easting). Wider drill spacing is categorised into the Inferred Resources.* • *All factors considered; the resource estimate has in part been assigned to Measured and Indicated with the remainder as Inferred Resources.* • *The result reflects the Competent Person's view of the deposit.*
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• *Whilst Mr. Barnes (Competent Person) is considered Independent of the Company, no third party review has been conducted.*
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• *The relative accuracy of the Mineral Resource estimate is reflected in the reporting of the Mineral Resources as per the guidelines of the 2012 JORC Code.* • *The statement relates to global estimates of tonnes and grade.*

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Table 1 – JORC Table 1, Section 4
Estimation and Reporting of Ore Reserves

Criteria	Explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	*Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.*	*The Mahenge Project includes the Ulanzi, Cascades and Epanko North deposits. Resource estimate updates for Ulanzi (November 2021), Cascades (July 2017) and Epanko North (September 2016) were prepared by Mr Lauritz Barnes (Trepanier Pty Ltd) the competent person for these resource estimations.* *At a cut-off grade of 3% Total Graphitic Carbon (TGC), the Ulanzi resource contains 114.5Mt of Measured, Indicated and Inferred materials with an average grade of 8.1% TGC.* *At a cut-off grade of 3% TGC, Cascades contains 60.0Mt of Measured, Indicated and Inferred materials with an average grade of 8.1% TGC.* *At a cut-off grade of 3% TGC, Epanko North contains 38.4Mt of Measured, Indicated and Inferred materials with an average grade of 6.1% TGC.* *Only the Measured and Indicated proportions of the Ulanzi and Cascades were used as a basis for the conversion to the Ore Reserve.* *Epanko North resource is included in the enhanced Definitive Feasibility Study (eDFS) and sequenced as the last resource to be mined. Epanko North is not represented in the Reserve estimate.*
	Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	*The Mineral Resources are reported inclusive of the Ore Reserves.*

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Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	*The Competent Person (Mr John de Vries) first visited the proposed mining site of the project in February 2017 and on numerous occasions throughout 2018 to 2021.* *The following observations are made:* • *The mining area is located near the town of Mahenge, Ulanga province Tanzania. The site is 480km south west of the capital Dar Es Salaam.* • *The site is connected by road to Dar Es Salaam. A rail connection (between Ifakara and Dar Es Salaam) is 70km from the project site. Travel time by road to Dar Es Salaam is 12 hrs, travel time to Ifakara is 2 hrs.* • *The port of Dar Es Salaam is the fourth largest Indian Ocean port in Africa, is has facilities suitable for export of containerised graphite concentrate.* • *Population density of the site area is relatively low without any substantial communities. The nearest town, Mahenge (population 8,000) is approximately 5 km to the east.* • *There is no power or water supply on site. Power supply to the town of Mahenge is inadequate to operate a processing plant, although 220kV national grid connections are available at Ifakara 70km away. TANESCO, the national electric company of Tanzania, have completed line upgrade studies and are planning to upgrade the power supply to Mahenge which will also supply the site with grid power.* • *The nearest railway line to site offering both freight and passenger transportation is a bi-national railway linking Zambia and Tanzania operated by TAZARA (Tanzania and Zambia Railway Authority). TAZARA has a railway terminal and rail siding facility at Ifakara.* • *The mining area is in rugged terrain with hills and valleys, there are few flat spots. The deposits occur along the ridges and substantial pioneering will be required to establish the mining areas.* • *Oxidised rock outcrops occur on the ridges while the valleys are covered with highly weathered transported materials. Some of the highly weathered materials appear to be "free dig" without the need for drilling and blasting.*

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		• *Diamond drill core indicates competent (fresh) rock conditions with high RQD values. This is favourable for pit walls and unfavourable for blasting.* • *There is a presence of sulphides, visible in the drill core. These may have an adverse impact of acid mine drainage (AMD).* • *The project area lies in a strongly defined wet and dry season climate. A net positive rainfall balance exists.* • *The site is positioned within the headwaters of the Kilombero River which is part of the Rufiji catchment basin. The water is used for agricultural and village drinking water.* • *There are creeks providing for local drainage. These can flow during the wet season which lasts from December to April.* • *While contour mining takes place (before the pit goes below the natural topography) free drainage is available with no risk of flooding. After this adequate pit dewatering will have to be established but no hydrological information is available to establish these dewatering needs. Weather stations and stream gauges have been set up at Ulanzi and Cascades since 2019 to collect baseline data and establish seasonal fluctuations on site.* • *Water diversion works will be required during operation as the Mbaha river cuts across the Ulanzi pit.*

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Study status	*The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.*	*The eDFS (enhanced Definitive Feasibility Study) for the Mahenge Graphite Project is the basis for conversion of Resources to Reserves. The study was compiled by CPC Engineering in July 2019.*
	The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.	*The eDFS was underpinned by a mine plan detailing mining locations, ore and waste quantities, mill feed quantities, and mill head grades. Scheduling is reported in monthly, quarterly and semi-annual periods for the first five years then annually for the rest of life of mine (LoM).* *Mine planning activities included pit optimisation, interim staged and final pit designs, mine and waste disposal scheduling, concentrate production estimation, and mining cost estimation.* *Modifying factors considered during the mine planning process included slope design criteria, mining dilution and ore loss, process plant recoveries, processing costs, general and administration costs, concentrate price and royalties, land access and permitting.* *For tailings management, the eDFS has adopted dry stack tailings disposal system. Black Rock believes this disposal system offers a superior solution for tailings management and lowers project risk for a site located in a net positive rainfall environment and within the headwaters region of the large Rufiji catchment basin.* *The results of the eDFS support the results from the DFS and PFS Optimisation Studies and demonstrate that the Mahenge Graphite Project is technically achievable and economically viable.*

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Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	*The mine plan adopted a processing plant feed grade of 8.75% TGC. To achieve this target, cut-off grades of 7.0% TGC were applied for Ulanzi and Epanko North and 3.8% TGC for Cascades. These grades are designed to deliver the maximum NPV at the NPV max LoM planned grade of 8.75%.* *The mine plan is based on Measured, Indicated and Inferred resource materials however only the Measured and Indicated materials were converted to Ore Reserves. All Inferred material with the pit design has been treated at zero value.* *No other quality parameters were applied during the reserve determination.*
Mining factors or assumptions	*The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).*	*The pit optimisation and pit design work from the PFS Optimisation Study (completed August 2017) form the basis of the eDFS. Pit inventory reported within the interim staged and final pit designs were used to develop a mining schedule which incorporates Ulanzi, Cascades and Epanko North.* *Factors such as slope design criteria, mining dilution and ore loss, processing recoveries, processing costs, general and administration costs, concentrate price and royalties were applied as part of the pit optimisation process. These have not materially changed during the eDFS.*

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	The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.	*A conventional open pit mining method using proven technology was chosen as the basis for the eDFS due to the near surface and outcropping presentation of the graphite mineralisation, the relatively low stripping ratio and availability of land required to support the selected mining method.* *This method is suitable as it is well proved with standard off-the-shelf equipment (i.e. low risk) and, due to the low population density, the presence of mine infrastructure such as pits and waste dumps will have limited negative land use impact on the local population.* *Mine design criteria include minimum mining width, ramp width and gradient, pit exit location and slope design parameters.* *The mining fleet consisting of 45t excavators matched with 20t 6x4 mine tipper trucks was selected to initially develop site access, site establishment works and subsequent development of mining areas including the requirement to excavate highly weathered materials, high in clay content. Following the pioneering activities, a fleet of 55t articulated dump trucks and 90t excavators are used to take advantage of improved mining conditions where higher productivity and lower mining cost can be obtained with the larger units.* *In October 2021, the site topography was discovered to have been impacted by elevation measurement differences in historical and recent drillhole collars from various GPS campaigns. These adjustments, which added an extra 20-25mRL, were included as part of the November 2021 Ulanzi resource model update. The eDFS Ulanzi pit design was adjusted by 20mRL. The Ulanzi pit inventory from the updated Ulanzi resource model with eDFS defined scheduled block, is used for this ore reserve declaration.*

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The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc.), grade control and pre-production drilling.

The geotechnical parameters from the PFS Optimisation Study form the basis of the eDFS. A high level geotechnical assessment was undertaken by geotechnical consultants Peter O'Bryan and Associates resulting in pit slope design guidelines. These guidelines, which vary with weathering classification appear appropriate and had been applied in the pit optimisation and pit design activities. The final pit designs were then validated by Peter O'Bryan and Associates for adherence to the design guidelines.

Ulanzi pit slope parameters:

Eastern Wall	*0-30m below surface*	*30-40m below surface*	*>40m below surface*
Face Height	*5m*	*10m*	*20m*
Face Angle	*60 deg*	*60 deg*	*70 deg*
Berm Width	*4.5m every 5m*	*7m*	*7m*

Western Wall	*0-30m below surface*	*30-40m below surface*	*>40m below surface*
Face Height	*5m*	*10m*	*20m*
Face Angle	*60 deg*	*60 deg*	*65 deg*
Berm Width	*4.5m every 5m*	*7m*	*7m*

End Walls	*0-30m below surface*	*30-40m below surface*	*>40m below surface*
Face Height	*5m*	*10m*	*20m*
Face Angle	*60 deg*	*60 deg*	*75 deg*
Berm Width	*4.5m every 5m*	*7m*	*7m*

Cascades pit slope parameters:

	Completely to Highly Weathered	*Moderate to Slightly Weathered*	*Moderate to Slightly Weathered*
Face Height	*5m*	*10m*	*20m*
Face Angle	*60 deg*	*60 deg*	*70 deg*
Berm Width	*4.5m*	*5m*	*7m*

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		There are no recommended pit slope parameters available for Epanko North. However due to the shallow nature of the potential pit, the Ulanzi pit slope parameters were adopted for Epanko North. *A geostatistical study to simulate grade control drill hole spacing was conducted by Trepanier Pty Ltd for potential grade control patterns applicable to the initial mining areas at Ulanzi. Based on the various combinations, a 15m (across strike) x 30m (along strike) drill pattern was selected as the initial drillhole pattern. Drill holes will be drilled at 60 degree inclination at 30m passes, overlapping at each bench and providing minimal disruption to the mining operation.* *Drill hole cuttings will be sampled manually at every 1m interval using a three-tier riffle splitter for grade control then combined to form 2m composites. Grade control samples will be analysed at an onsite lab facility to be established next to the process plant. Assaying cost has been obtained from Bureau Veritas Perth to establish this facility. The grade control drill pattern will be optimised at operational phase when further data becomes available.*
	The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).	*The Mineral Resource models used as a basis for pit optimisation and subsequently the Ore Reserve, were the Ulanzi October 2016 resource model (bkt_mahenge_2016_09_v1) and the Cascades July 2017 resource model (bkt_mahenge_cascade_2017_03_v1). The Mineral Resource model for Ulanzi was recently updated with the Ulanzi November 2021 resource model (bkt_ulanzi_2021_11_v1). No engineering work had been undertaken however validation was performed to assess the impact of model update and in determining its appropriateness for Ore Reserve declaration.* *Pit slope design criteria and processing recoveries were applied in the pit optimisation process together with mining, processing, "General & Administration" and concentrate transport cost estimates, concentrator performance, including recovery and concentrate grade predictions, and revenue projections.*

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	The mining dilution factors used.	*To allow for the effects of material mixing during blasting and the effects of ore-waste delineation inaccuracies in the pit, the resource models were reblocked with smoothing to model mixing of materials and by applying dilution and ore loss to edge blocks.* *For Ulanzi, the process was applied to Measured and Indicated resource materials. For Cascades, it was applied to Measured, Indicated and Inferred materials.* *This method reduces the Ulanzi Measured and Indicated resource materials from 46.5Mt @ 8.7%TGC to 46.5Mt @ 8.4%TGC (at 7% TGC cut-off grade) and the Cascades Measured, Indicated and Inferred resource materials from 28.8Mt @ 8.9%TGC to 28.8Mt @ 8.6%TGC (at 3.8% TGC cut-off grade). These reductions are a combination of dilution and recovery.*
	The mining recovery factors used.	*See above.*
	Any minimum mining widths used.	*Ulanzi and Epanko North:* *Dual lane ramps: 18m wide road surface, 10% gradient max.* *Single lane ramps: 13m wide road surface, 10% gradient max.* *Minimum mining width 30m, 20m in final bench and good-bye cuts.* *Cascades:* *Dual lane ramps: 22m wide road surface, 10% gradient max.* *Single lane ramps: 16m wide road surface, 10% gradient max.* *Minimum mining width 30m, 20m in final 2 benches and good-bye cuts.* *Pit staging sequence and cutbacks are based on pit designs from the PFS Optimisation Study and repeated for the eDFS.*

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	The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.	*No Inferred resource materials have been included in the Ore Reserve estimate.* *The milling schedule includes Inferred resource materials. The Others material category consist of Inferred, Unclassified and Mineralised Waste materials.* *The percentage of Others materials processed is nil during the first 2 years and 10% the following 9 years. Thereafter from Year 12, it gradually increases.* *The risk of including Inferred materials in the processing schedule is low as:* • *The volumes during the first 12 years are low.* • *Further refinements in scheduling may reduce the dependency on Inferred materials during the earlier years.* • *A budget allowance to upgrade the Inferred materials to Indicated level has been included in the project cost estimate (from Year 13 onwards).*
	The infrastructure requirements of the selected mining methods.	*The infrastructure for mining includes fuel & oil storage facilities, fuel bay, workshops, wash bay, magazines, bulk emulsion storage facility, offices, lunch and ablution facilities, and a first aid room.*

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Metallurgical factors or assumptions	*The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.*	*The concentrator plant utilises crushing, grinding and flotation technology to produce a minimum graphite concentrate grade of 95% TGC. Additional circuits have been designed and costed to produce graphite concentrate grades of 97.5% and 99%. The concentrate will be transported in loose 1t Bulka bags which will be trucked offsite and containerised at Ifakara.* *The initial concentrator proposed at Ulanzi has a nameplate capacity of 1Mtpa of ore with a feed grade of 8.75% TGC. In Year 2, a second module is commissioned doubling total capacity with ore processed at a rate of 2Mtpa. In Year 3, a second concentrator is proposed at Cascades together with an additional module to triple the original ore process throughput rate to 3Mtpa. In Year 4, the final module is commissioned quadrupling total site capacity to 4Mtpa of ore processed.* *Each concentrator process was designed and costed by CPC Engineering to achieve a graphite recovery of 93%.* *Production ramps to full production over the first three quarters of operation for each module of the four modules.* *Production Ramp-up:* *Period* / *Plant Throughput* / *Plant Recovery* *1st quarter* / *80%* / *85%* *2nd quarter* / *87.5%* / *87.5%* *3rd quarter* / *95%* / *90%* *4th quarter* / *100%* / *93%*

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	Whether the metallurgical process is well-tested technology or novel in nature.	*The concentrator flowsheet is common for the treatment of graphitic carbon ores and metallurgical laboratory test work undertaken by SGS at Lakefield (Canada) has been used as a basis for the plant design. A total of 90t of drill cores and surface bulk sample was run through a pilot plant an initial phase of testing in early 2018. This testwork underpins the confidence that the plant is to meet expectations for throughput, recovery, concentrate grade and concentrate flake size.* *A further 500t of drill cores and bulk samples obtained in early 2018 as part of a metallurgical drill program and representing the first 10 years of mining at Ulanzi, was sent through a 500t large scale processing plant campaign in Shandong, China for customer qualification works. The campaign was completed successfully in December 2021.*

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	The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.	*Metallurgical test work was carried out by SGS in Lakefield (Canada). Flowsheet selection was based on results of numerous flotation/attrition tests undertaken on a bulk composite which provided high recoveries and high graphite purity.* *Variability follow up work was conducted on several drill hole samples and fresh and oxide ores to ensure the results were repeatable along strike and down dip in the significant mineralized zones.* *When the samples were subjected to the same flowsheet, consistent and repeatable results were obtained suggesting low variability with regard to recovery outcomes while targeting high concentrate grade.* *Pit optimisations are sensitive to concentrate pricing, and by definition flake size distribution and purity. Pricing assumptions used in the pit optimisation are based on Chinese export pricing 2015, 2016 and 2017 as supplied by Benchmark Minerals March 2016. Subsequent marketing work during the DFS has indicated potentially higher prices as realisable. These higher prices have not been considered in the ore reserve price assessment.* *Black Rock have strategically moved towards a more transparent platform for graphite pricing with its customers under long term offtake contracts since 2020. The binding offtake with POSCO in December 2020 is to be determined from the Asian Metals Flake Graphite Index while the binding offtakes with two existing Chinese offtake customers in August 2021 will be price referenced from published Asian based indices, RefWin and ICCSino.* *For mine planning purposes an assumption of a homogenous distribution of flake distribution has been made. Short term variance in performance is managed by finger chevron feed strategy on the ROM.*
	Any assumptions or allowances made for deleterious elements.	*Metallurgical testwork had not identified any deleterious or radioisotopes. During the reserve estimation, no allowances have been made for deleterious elements.*

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	The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole	*No further testwork was carried out beyond the batch testing outlined above.*
	For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet specifications?	*Not applicable.*
Environmental	*The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	*An Environmental Impact Assessment was completed between December 2016 and January 2017. The assessment did not indicate any contra indications for the project. Subsequent to, the EIA, an Environmental Impact Study (EIS) process commenced in February 2017. However a review and resulting changes to the Tanzanian Mining Law during the second half of 2017 resulted in the withholding of the EIS application.* *The project was designated Application Reference Number (ARN) 6259 by the National Environmental Council of Tanzania. An environmental licence EC/EIA/2018/0352 for the project was granted on 29 August 2018.* *Late 2018, Black Rock applied for two mining licenses covering the Mahenge Graphite Project. The two Mining Licences ML611/2019 and ML612/2019 covering Ulanzi, Cascades and Epanko North were subsequently granted in February 2019.* *In December 2021, the Government of Tanzania has agreed to merge existing Mining licences and transfer the environmental licence to a single Special Mining Licence.* *The presence of sulphides has been observed in the drill cores. Mill tailings from earlier pilot plant testwork have undergone long term stability testing at Graeme Campbell and Associates laboratory in Bridgetown WA. Sulphides will be subject to a scavenger float process and high sulphur concentrate will be disposed in a manner to ensure no AMD.*

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Infrastructure	*The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*	*The project is located 3km from the Mahenge access road.* *The project assumes on site power will be provided through grid power at project commencement. Black Rock has also made provision for diesel generators to be available to ensure availability of power at project commencement.* *Grid power cost assumptions are based industry standard costs and quotes from TANESCO (Tanzania national power authority).* *Onsite water treatment and an onsite accommodation (120 man camp) are considered as part of the project. In line with Black Rock policy and meeting the Local Content requirements of the updated Mining Law, a majority of personnel will be sourced locally.* *Land for development of pits, plant and tailings storage facilitates is present within the project area. A well-defined process exists within Tanzania for land access for mining projects with a quantifiable pathway for determining compensation for loss of amenity or relocation. The close proximity of the scattered settlement to the revised plant site will require relocation of this village. Provision for compensation has been included in the capital estimate.* *Transportation of concentrates will be via Ifakara to the port of Dar Es Salaam. The concentrates will be hauled from site in bulka bags to Ifakara. Black Rock will construct and operate a new rail siding at Ifakara. Each bulka bag will be customs cleared before loaded into 40' sea containers prior to railing by TAZARA to the port of Dar Es Salaam.*

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Costs	*The derivation of, or assumptions made, regarding projected capital costs in the study.* *The methodology used to estimate operating costs.*	*Mining costs were estimated from first principles for an owner operator scenario. Basis for the estimate are the mining schedule, haulage profiles and productivity assumptions, to estimate the resources for the activities (Clearing, Topsoil removal, Haulroad construction, Grade control drilling, Drilling, Blasting, Loading, Hauling, Rehandle) required to meet the schedule.* *Mining capital costs were estimated from the initial equipment requirements and their replacement costs during the life of the operation using March-June 2018 equipment prices.* *Mining operating costs include equipment maintenance and operating costs such as personnel, fuel, tyres, explosives, ground engaging tools.* *Capital and operating costs for milling and onsite infrastructure have been obtained from vendor pricing and estimated from a first principals' basis where necessary. Vendor pricing forms greater than 80% of the estimated capital costs for the concentrator. In addition, Black Rock has formed a strategic agreement with Yantai Jinyuan Mining Machinery Ltd (Yantai), a major graphite process plant engineering company based in China's Shandong Province, to supply process plant machinery for the project.* *Freight estimates are based on firm quotes from reputable, in country logistics suppliers and TAZARA (Tanzania Zambia Railway Authority) a bi-national railway freight provider using standard rates.*
	Allowances made for the content of deleterious elements.	*Metallurgical testwork had not identified any deleterious elements or radioisotopes.* *No allowances have been made for deleterious elements during the Reserve estimation.*

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	The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co- products.	*Product sales are by long term contracts, on a peer to peer basis. Public price data is considered competitive industry intelligence with little disclosure of long term pricing, other than through third party consulting organisations.* *Graphite basket pricing used in this Reserve estimate has referenced natural graphite flake pricing sourced from Roskill 2018. Market pricing is forecast price FOB China. This is considered as spot pricing. Basket prices used in reserve assessment is based on sub baskets of flake of different sizes and composited to form a weighted average price for each deposit. Basket pricing in USD is set out below for 97.5% product.* *Black Rock has entered into a non-binding Term Sheet for Life of Mine contract for sales of -#100 mesh concentrate to POSCO International. A total of 30,000 tonnes (plus 15,000 tonnes of volume at sellers options) of large flake is allocated under binding Term Sheets to two Chinese customers.*
	Derivation of transportation charges.	*These have been accounted in derivation of price FOB Dar Es Salaam.*
	The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.	*Pricing basis is FOB Dar es Salaam. See above for derivation of graphite basket price.*
	The allowances made for royalties payable, both Government and private.	*All royalties, a 16% free carried interest and taxes have been considered in the assessment. VAT is assumed to be fully refunded on export of product.*

Mesh	*95% Segment FOB Dar*	*97.5% Segment FOB Dar*	*99% Segment FOB Dar*
32	*1,230*	*1,467*	*1,705*
50	*1,106*	*1,343*	*1,581*
80	*1,101*	*1,339*	*1,576*
100	*1,039*	*1,277*	*1,514*
-100	*977*	*1,215*	*1,452*
Weighted Ave.	*1,063*	*1,301*	*1,538*

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Revenue factors	*The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.*	*A premium of 2.5% has been applied to account for the increased purity (98%-99%) of Black Rock's product relative to the reference Chinese basket of 94% - 95%. A further adjustment was made to equalise freight between China and Dar es Salaam to ensure pricing is based on equivalent basis.* *Pricing basis is FOB Dar es Salaam.* *Marketing and realisation costs have been considered as part of the operating cost.*
	The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	*For the eDFS, company specific price estimates vary from external industry sourced data, however for external public reporting of valuation, referenced public data has been selected.* *Pricing has been referenced Roskill Natural and Synthetic Graphite: Global Industry, Markets and Outlook, 2018 © Roskill, 2018. Roskill estimates have been modified by Black Rock to account for targeted grades not being reported, and for flake sizing not considered by Roskill.* *Time periods have been averaged over time to generate a real price for project start date.* *FOB realized pricing has been generated by removing an evenly weighing for freight between Tanjin, Tokyo and Busan from prices FOB China. Nominal frictional costs for agency, long term contract discounts of 2.5% each are then added to generate prices FOB Dar es Salaam.* *China has a dominant position in the global supply of graphite. Recent product prices from published Asian based indices, RefWin and ICCSino were used to compare and validate the basket prices from the eDFS. The prices used in the study were found to be relevant and current.*

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Market assessment	*The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.*	*Graphite flake is an internationally traded industrial mineral concentrate. Traditional uses include refractory, lubrication and expanded flake for insulation. Significant growth in the Lithium Ion Battery sector, of which graphite is a key input, battery anode precursor, is widely forecast to increase volumes in the near term.*
	A customer and competitor analysis along with the identification of likely market windows for the product.	*Chinese production currently dominates freely traded graphite production and is considered to form spot pricing. The discovery of the East African graphite province has led to a number of projects being identified. Development of all projects will exceed current projection for demand. Mahenge's staged development strategy is designed to ensure market shocks associated with significant increases in available volume are managed.* *Mahenge's product profile is for 70% flake and 30% fines. The flake market is already in deficit and subject to successful pre-qualification market is assumed to support volume and pricing.*

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	Price and volume forecasts and the basis for these forecasts.	*Graphite is sold by contract based on the performance of market samples provided to customers.* *Current graphite market volumes are estimated at 800kt, with most production being of Chinese origin. Industry analyst Roskill estimate that by 2025, the global volume will rise to 1.6Mt. Existing mine closure of 0.4Mt indicate new production of 1.2Mt will be needed by 2025.* *Black Rock's product of above average industry purity is well suited for the energy storage market and other high end industrial applications (eg. fire cladding material).* *In December 2020, Black Rock successfully secured POSCO as a cornerstone investor and a 100% supply 25-30ktpa of LOM fines (<100 mesh) from the first module.* *In August 2021, Black Rock successfully transited two of its existing Chinese offtake customers to binding offtakes for 30ktpa of large flakes (>+100 mesh) with options for a further 15ktpa from the first module. Product pricing is indexed to published Asian based indices, RefWin and ICCSino.* *In the absence of binding pricing and contracted volumes, the Reserve is considered to be of a Probable level of confidence.*

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Economic	*The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.*	*The project economic analysis has been performed by PCC on behalf of CPC Engineering and Black Rock. The assumptions used in the Ore Reserve analysis are as follows:* • *Inferred material was assigned zero value and assumed to be waste* • *10% discount real* • *LoM Cash costs $397/t USD* • *Payback Period 3.8 years from first production* • *NPV $1,712M USD Real before tax* • *NPV $1,162M USD Real after tax* • *IRR 53.6% Real before tax* • *IRR 42.9% Real after tax* • *Capital stage 1 - $115.6M USD for 1Mtpa throughput* • *Capital stage 2 – $69.5M USD* • *Capital stage 3 – $85.3M USD* • *Capital stage 4 - $67.1M USD*
	NPV ranges and sensitivity to variations in the significant assumptions and inputs.	*The project is relatively insensitive to capital and operating costs. However it is sensitive to product grade and price obtained. A 10% change in grade impacts NPV by 17%, and a 10% change in price impacts NPV by 18%.*

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Social	*The status of agreements with key stakeholders and matters leading to social licence to operate.*	*The EIS process commenced in February 2017. The EIS process was withheld due to changes in the Tanzanian Mining Law during the second half of 2017.* *The EIS and environmental licence was granted in 2018. Licence will be transferred into a Special Mining Licence which will be granted as part of the Free Carried Interest Framework Agreement agreed with the Government of Tanzania on 13th of December 2021.* *The Resettlement Action Plan consisting identifying villagers impacted, village land use plan and the resettlement site plan were completed over 2021. The compensation and physical resettlement of villagers will as part of the implementation of the FCI framework agreement completed with the Government of Tanzania on 13th December 2021.*
Other ***To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves.***	*Any identified material naturally occurring risks.*	*A risk analysis was undertaken and summarised by CPC Engineering. Four key risks were identified:* • *Delays to the project would result in the project missing the anticipated capital and offtake market windows.* • *Risk of funding not being available to fund the project to construction and full operation.* • *Risk that Black Rock is not able to achieve full pricing for it's product.* • *COVID induced supply chain disruption impacting capital costs and logistics availability*

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	The status of material legal agreements and marketing arrangements.	*An Environmental Impact Assessment Certificate for the project was issued by the National Environment Management Council of Tanzania (NEMC) in September 2018.* *In December 2020, POSCO became a cornerstone investor and offtaker after entering into a Strategic Alliance and Development Memorandum of Understanding in June 2020 and committed to the development of the Mahenge Graphite project.* *In August 2021, Black Rock successfully transited two of its existing Chinese offtake customers to binding offtakes for 30ktpa of large flakes (>+100 mesh) with options for a further 15ktpa from the first module. Product pricing is indexed to published China sourced indices, RefWin and ICCSino. This raises total commitments up to 60ktpa (or 70%of product) expected from the first module.* *In December 2021, Black Rock have completed a large qualification pilot plant processing campaign of 500t and the graphite concentrate post qualification has commenced. Final basket pricing can be expected post qualification. Black Rock is pursuing a strategy of locking up a significant portion of product from the first module under long term offtake contracts.* *As part of the Strategic Alliance and Development MOU, Black Rock is progressing discussions with POSCO of an Offtake Agreement which includes a prepayment facility of up to US$20m. In December 2021, a term sheet with POSCO had been agreed for product prepayment of US$10m and a 100% of fines from the first module. The term sheet is a precursor to a binding offtake agreement to be finalised in early 2022.*

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	The status of government agreements and approvals critical to the viability of the project, such as mineral tenement status and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third part on which extraction of the reserve is contingent.	*Two contiguous mining licences covering Ulanzi, Cascades and Epanko North, ML 611/2019 and ML 612/2019 were granted in February 2019.* *The 16% Free Carried Interest (FCI) framework agreement for the project with the Government of Tanzania was reached and formally signed in December 2021. A joint venture company, Faru Graphite Corporation (Faru) has been established as part of the FCI framework agreement. The Government of Tanzania will own a 16% shareholding in Faru while Mahenge Resources Limited (UK), a 100% subsidiary of Black Rock, will own the remaining 84%.* *A Special Mining License can be expected and granted in due course, in pursuit of FCI framework agreement, to unify the two mining licenses and part of prospecting lease PL 13752/2019.*
	The basis for the classification of the Ore Reserves into varying confidence categories. Whether the result appropriately reflects the Competent Person's view of the deposit. The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).	*Because there is no certainty that all assumptions will materialise the Measured and Indicated materials within the schedule have been converted to the Probable reserve category.*

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Classification	*The results of any audits or reviews of Ore Reserve estimates.*	*An external technical review of the eDFS was undertaken and completed by SRK Consulting (Australia) in November 2020 as part of POSCO's due diligence process for investing US$7.5m to acquire 15% of Black Rock. SRK Consulting had made the following recommendations:* • *Prepare a final consolidated eDFS report with reference documents able to support an external funding review;* • *Revise capital and operating costs to based upon formal contractor quotation pricing;* • *Foundation investigation, characterisation and stability analysis checks required where structures are situation on sloping ground (waste dumps and waste rock embankments);* • *Carry out residue filtration testing to define target moisture content of the dry stack tailings;* • *Confirm via MOU the process and cost of a power transmission line to site to provide a definitive capital cost baseline.*
Audits or reviews	*Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.*	*The modifying factors for the Reserve is based on the eDFS completed in July 2019. Economic assumptions are based on pricing as at September 2018 and continue to remain current under existing economic conditions.* *The Resource estimate was completed in September 2016, July 2017 and November 2021. Statistical investigations have been undertaken on 2m composites within the mineralised domains (zones), as applied to an Ordinary Kriged grade estimate. The relative precision of an estimate is consistent with the JORC classification methodology.* *A very small volume of non-classified material is processed for the first 20 years of the mine schedule with increasing volumes thereafter. A large portion of resource is classified as Measured in the production schedule.* *All Ore Reserve estimates are classified as Probable due to marketing considerations and securing favourable funding terms for the project.*

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Discussion of relative accuracy/ confidence	*The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.*	*The resource, and hence the associated reserve, relate to global estimates.*
	Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.	*The project has advanced past study stage and is at pre-construction/early works stage. Continued advancement through pilot plant, Front End Engineering Design Study and change to a contract mining model will reduce risk to the invest cost and operating parameters of the project. This will be expressed as a reduction of contingency applied to the capital estimate, EPC estimate and operating cost estimate.* *Irrespective of reduced contingency as a consequence improved study precision, the Reserve will continue to be classified as Probable until there is enforceable offtake agreement for an economically important volume of production.*
	It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	*Project has completed a Definitive Feasibility Study in October 2018 and a subsequent update enhanced Definitive Feasibility Study in July 2019. An absence of production data precludes further comment.*